NAVAL WAR COLLEGE REVIEW

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Contributors

Permissions

CONTENTS

War Gaming

Certain recent war games at the Naval War College point out for war-gaming professionals a path that will return them to the explorative power of gaming envisioned by William McCarty Little soon after the founding of the College—a perspective that values both experiential processes and analytical outcomes and understands that these domains are not mutually exclusive.

The director of a war game, responsible for meeting the sponsor's objectives, must successfully manage three particular categories of senior stakeholders or risk—as the three "weird sisters" of Shakespeare's Macbeth threatened—"double, double toil and trouble."

Naval History

The concept of a "fleet in being" has been understood in various ways and generally maligned. But two Royal Navy episodes in the age of sail that might be considered, in retrospect, as the concept's earliest applications suggest a purpose that has more claim on modern naval strategists.

The asymmetric counter that the Soviet Union devised against U.S. aircraft carrier forces in the Cold War had strong parallels—both in concept and in suicidal outcome—with the Japanese kamikaze campaign against those same forces late in the Pacific War.

"Winning" the Pacific War

There were actually three plans for the attack against Pearl Harbor: two developed by Minoru Genda—reflecting his belief that the target was the base, not the Pacific Fleet—and the one actually executed. Had the Japanese followed either of Genda's plans, the events of 1942, at least, would have been fundamentally different.

Research & Debate

Commentary

Book Reviews

FROM THE EDITORS

One of the four key missions assigned the Naval War College has long been the education of future leaders. In 2007, the College of Operational and Strategic Leadership (COSL) was established as a component of the College to sharpen the focus of its educational activities in direct support of the fleet. In our feature, after these notes, Rear Admiral James Kelly, USN (Ret.), the current dean of COSL, provides an account of what may prove to be the most important initiative undertaken in recent years to review, align, and strengthen the policies and processes by which the Navy develops its leaders at all levels. (Rear Admiral Ted Carter, President of the Naval War College, addresses this topic in his "President's Forum," below.) Further reflections on military leadership today are offered later in this issue by retired Navy captain Chris Johnson, as well as by the distinguished military historian Williamson Murray in his extended essay on Tom Ricks's widely discussed recent book *The Generals.*

The Naval War College's War Gaming Department is located in McCarty Little Hall, a state-of-the-art gaming and decision-support facility on the College's Newport campus. As Hank J. Brightman and Melissa K. Dewey remind us in "Trends in Modern War Gaming: The Art of Conversation," Lieutenant William McCarty Little, the founder of war gaming in the U.S. Navy, was a true innovator and visionary who devised an approach to war gaming that remains highly relevant today. Rather than seeking to use gaming tools to reduce complex interactions into artificially simplified terms, McCarty Little understood clearly that warfare is a holistic experience that is at its heart a dialogue or conversation among comrades and adversaries alike. As the coauthors show, this understanding persists today in the way the department structures its games in such challenging contemporary areas as irregular warfare. A complementary discussion of contemporary gaming is provided by Stephen Downes-Martin in "Your Boss, Players, and Sponsor: The Three Witches of War Gaming." Professor Downes-Martin too focuses on the personal-interaction factor in gaming, but from a different point of view. For the unwary, it is too easy to overlook or underestimate the corrosive effects on the integrity of the gaming process of bureaucratic and personal imperatives on the part not only of the sponsoring organization but of the chain of command of the executing organization, and even the players themselves. Hank Brightman

and Stephen Downes-Martin have had long experience as professor-practitioners in the War Gaming Department of the Naval War College.

Along with war gaming, the study of naval and maritime history has been a central component of a Naval War College education from its beginning more than a hundred and twenty-five years ago. The history of the Royal Navy remains today one of the richest stores of naval experience on a global scale over a number of centuries. John B. Hattendorf, in "The Idea of a 'Fleet in Being' in Historical Perspective," traces the elusive and widely misunderstood concept of a "fleet in being" from its apparent origins in an Anglo-French naval encounter of 1690 through the American Revolution to the arguments surrounding it in the writings of British (and American) naval theorists in the late nineteenth and early twentieth centuries. He makes the case that while a proper understanding of the concept can be a useful guide to action for an inferior fleet under certain circumstances, it would be unwise to elevate it to the status of a viable and attractive strategic option. John Hattendorf is the Ernest J. King Professor of Maritime History and chairman of the Maritime History Department, Naval War College.

The question of the options available to inferior fleets is taken up from quite a different angle by Maksim Y. Tokarev, in "Kamikaze: The Soviet Legacy." Improbably, yet persuasively, Tokarev finds in the Japanese kamikaze attacks of the last period of the Pacific War a model for understanding how the Soviet Union sought to solve the problem posed by American carrier strike groups over the course of the Cold War. His analysis of the bureaucratically orphaned Soviet naval aviation community is of particular interest in understanding the ever-present challenges of joint and combined-arms warfare at sea. Maksim Tokarev served as an officer in the Soviet Navy and later in the Russian Coast Guard.

World War II, needless to say, also remains a rich source of naval operational experience. In "'Winning' the Pacific War: The Masterful Operational Design of Minoru Genda," Angelo N. Caravaggio revisits the well-known story of Japanese planning for the attack on Pearl Harbor in December 1941. Using a neglected trove of oral interviews from the early 1950s, he makes the case that of all Japanese naval planners, Commander Minoru Genda had the clearest grasp of the strategic and operational situations in the Pacific at this juncture and devised a plan to achieve what in retrospect appears to have been the only real chance for a decisive Japanese victory over the United States—a determined effort to eliminate Hawaii as a forward base for American military forces in the Pacific. Fortunately, Genda's ideas were too bold and unorthodox for a Japanese military leadership fatally handicapped by interservice rivalry and an inability to prioritize strategic options realistically. Additional commentary on Japanese competence in the Pacific War is provided by James P. Levy in his brief review of the literature on the battle of Midway of June 1942. Levy's thesis in brief is that contrary to much of

this literature, the battle was not so much lost by the Imperial Japanese Navy as won by the U.S. Navy.

Lieutenant Jimmy Drennan, USN, in "Strength in Numbers: The Potential of (Really) Small Combatants," sets out to use statistical analysis to test the argument put forward by Jeffrey Kline and Wayne Hughes, in the Autumn 2012 issue of the *Review,* concerning the merits of a "flotilla" concept for the U.S. Navy in the face of the challenge it confronts in the western Pacific by the rising naval power of the People's Republic of China. His conclusion is that a large number of even modestly effective small warships (smaller and cheaper than the Littoral Combat Ship) operating independently of each other has better odds of defeating a major enemy combatant than does a single very capable combatant of one's own. This certainly flies in the face of much conventional thinking not only about the cost-effectiveness of carriers and other large surface warships but also about the merits of net-centric warfare. (The essay itself represents a mode that we hope to revisit—see the item below.)

MAKING THE MOST OF THE ONLINE REALM, IN PRINT

In publishing the essay "Strength in Numbers," by Jimmy Drennan, in this issue's "Research & Debate" department (briefly introduced above), we think we may have found, with Lieutenant Drennan's kind cooperation, a model for a useful synthesis of the strengths of online and print publication. His original "post" took advantage of the web's ability to put a specialized piece of work efficiently before the eyes of a large, specialized audience of fellow "practitioners" and to collect their immediate responses. What appears in this issue capitalizes, in turn, on what a print quarterly can do—putting a fully thought-out synthesis before an even broader audience, including readers who don't routinely enter the online world but are engaged with or interested in the issues. We'd like to keep up the momentum. Have you posted online a piece of this kind that has attracted such valuable responses, from which you might produce such a synthesis in essay form? We'd be delighted to consider it.

NEW FROM THE NAVAL WAR COLLEGE PRESS

The twenty-first in our Historical Monograph series—*Blue versus Orange: The U.S. Naval War College, Japan, and the Old Enemy in the Pacific, 1945–1946,* by Hal M. Friedman—is now available for online sale by the Government Printing Office. The new book (a companion to the author's 2010 *Digesting History: The U.S. Naval War College, the Lessons of World War Two, and Future Naval Warfare, 1945–1947*) closely analyzes war gaming at the Naval War College in the academic year 1945–46, as both a reflection and source of the U.S. Navy's doctrinal and strategic responses to the experience of World War II—responses that would help

the Navy shape its approach to the Cold War. *Blue versus Orange* also describes in fascinating detail the practice of war gaming at the Naval War College in that era.

IF YOU VISIT US

Our editorial offices are now located in Sims Hall, in the Naval War College Coasters Harbor Island complex, on the third floor, west wing (rooms W334, 335, 309). For building-security reasons, it would be necessary to meet you at the main entrance and escort you to our suite—give us a call ahead of time (841-2236).

STRENGTHENING OUR NAVAL PROFESSION THROUGH A CULTURE OF LEADER DEVELOPMENT

> *Furthering our advantage as the world's finest Navy requires developing leaders who personify their moral obligation to the naval profession by upholding Navy Core Values and Navy Ethos; fulfill their obligations as leaders of character and integrity; and confidently exercise their authority and responsibility with a strong and abiding sense of accountability for their actions throughout a career of selfless service.*
>
> NAVY LEADER DEVELOPMENT STRATEGY, JANUARY 2013

Who are the leaders in our Navy?

If "four star admirals" is the response, that is the wrong answer.[*] The right answer is: *every* Sailor, insofar as he or she is responsible for other Sailors, is a leader in our great Navy.[†] From the most junior enlisted personnel to the most senior officers, all are a part of the leadership equation. Junior enlisted personnel need to be recognized as prospective leaders who have the potential for strategic impact through their performance—not as folks "who just follow orders"—just as senior officers are called on to be bold and decisive leaders with the responsibilities of promoting and safeguarding the morale of those under their command. Indeed, all Sailors must understand that we—individually and collectively as the Navy Team—are accountable for the welfare of our shipmates, no matter our respective ranks.

Leadership is not just about what we do, it is about who we are. Being an effective leader requires more than mastering a checklist of skills. At its core, being effective leaders is about who we are as members of the naval *profession*. First and foremost, the naval profession exists to serve our country, to help accomplish our

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[*] The epigraph is from U.S. Navy Dept., *The Navy Leader Development Strategy* (Washington, D.C.: n.d. [January 2013]), available at www.usnwc.edu/navyleader. I would like to thank Dr. Olenda Johnson and Dr. Carnes Lord, in particular, and my Leadership & Ethics team in the College of Operational and Strategic Leadership in general, for their invaluable contributions to this article.

[†] In this article, the term "Sailors" represents both the enlisted members of the U.S. Navy and the officer corps, at all ranks and grades, E-1 to O-10.

nation's purposes and objectives, and to protect our way of life. Every Sailor, then, as a member of the naval profession is called to selfless service, to live by a set of core values, and to exhibit the ethos the Navy espouses. As members of the naval profession we possess specialized knowledge, skills, and expertise that enable us continually to achieve mission success. We are warfighters. At the same time, the naval profession has the responsibility of ensuring that our members uphold Navy standards and are developed as effective Navy leaders. *Ship—Shipmate—Self* applies here: The "ship" is the naval profession and the Navy's global mission set; our shipmates are the members of our team whom we look after and who look after us, always; and "self" is every Sailor—the warfighting member of the naval profession dedicated to a life of selfless service to our nation and Navy.

So, where do we stand today in terms of how we set out to develop our leaders?

Let us state the obvious: the Navy makes good leaders. Just look through the annals of history or the lens of today to witness the extraordinary leadership that Sailors of all ranks have exhibited in times of both peace and war. For the most part, Navy culture dictates that leadership derives from command at sea—which, many will agree, is a unique and challenging experience that demands self-reliance, independence, sound judgment, and confidence. Within the Navy culture, however, there is an expectation that leadership "just happens," or that effective leadership is achieved through what Admiral James Stavridis, recently retired, has described as "transference"—"just do what I do and you will be a good leader."* We may couple this with robust just-in-time training that ensures technical and tactical competence, and occasionally we augment our experiences with leadership training that focuses on a prescribed set of skills. In the end, though, we have a Navy culture in which leaders are forged primarily by experience and independent operation at sea.

What this reflects is that as a Navy we have not deliberately attended to developing the person as a leader (with "leader" being about the individual, "leadership" being about skills). What is lacking is an intentional process aimed at growing our Sailors. Instead we tend to leave development of the Sailor to chance or opportunistic events based on career timing or availability. Nor have we emphasized the significance of being members of *the naval profession* as we should. We seem to identify most closely with our individual communities first ("I am an aviator") and our Navy second. Consequently, the way we tend to think about "leadership" development has excluded (perhaps unintentionally) a purposeful focus on cultivating leaders of character who embody Navy core values—honor, courage, commitment—and the Navy ethos.

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* Adm. James Stavridis, then Supreme Allied Commander, Europe, comments during a briefing on the Navy Leader Development Continuum, Naval War College, Newport, R.I., 24 October 2012.

Furthermore, we must acknowledge that as a Navy we tend to undervalue the contribution of education in developing our Sailors as leaders. We limit the time Sailors are given to attend schoolhouses, or we seek to waive the requirement altogether. We mandate the shortest possible course lengths, while structuring career paths designed to maximize operational experiences. This has created a culture where going to the schoolhouse or attending war college is considered "time off"—rather than an uncompromising investment in our people and in our profession. This must change. Consider the following, from Admiral Arleigh Burke, in January 1959:

> There is one element in the profession of arms that transcends all others in importance; this is the human element. No matter what the weapons of the future may be, no matter how they are to be employed in war or international diplomacy, man will still be the most important factor in Naval operations. This is why it is so important that under the greater pressure of our continuing need to develop the finest aircraft, the most modern submarines, the most far ranging carriers and the whole complex of nuclear weapons, we must keep uppermost in mind that leadership remains our most important task.

Admiral Burke's observation is as relevant today as it was more than fifty years ago. And this is why the Navy has embarked on extraordinary culture change in the way we develop our people as leaders—from the time a Sailor voluntarily joins our great Navy to the time he or she departs.

How do we think more broadly about leader development for our Sailors?

Absent from our current leader development efforts is a continuum of learning that is systematic, integrated, and comprehensive. What we generally recognize as "leadership training" is for the most part disjointed and episodic, in some instances simply hit-or-miss. Therefore, the first step in creating a culture for Navy leader development is to establish a career-long "Leader Development Continuum" from E-1 (seaman recruit) to O-10 (admiral, four stars), across all Navy communities, and from accession to retirement or conclusion of service. Development of Navy leaders must, of necessity, be a deliberate and progressive process. Most importantly, this establishment of a career-long Leader Development Continuum is driven by the conviction of Navy senior leadership that such an effort is essential for sustaining and strengthening the naval profession, now and into the future. Critically, this effort is *not* just another "compliance" program designed to remedy a set of problems. Rather, it is the start of a long-term and proactive effort to influence the culture of the Navy and better prepare leaders for the future—a future characterized by increasing complexity and uncertainty, a future that brings its own set of new and unique challenges to the character of each Sailor as a leader.

So, it is within this context that over the last year and a half a dedicated team has been working to reshape the way the Navy approaches leader development, while laying the groundwork for a Leader Development Continuum. The foundation for the continuum is the *Navy Leader Development Strategy*—quoted at the beginning of this article—signed by the Chief of Naval Operations (CNO), Admiral Jonathan Greenert, in January 2013. Fundamentally, the *Navy Leader Development Strategy* establishes expectations for building leaders who will confidently and competently win our wars and meet the peacetime challenges of the increasingly complex maritime environment, as the scope of Sailors' responsibilities grows. More specifically, the strategy serves as our Navy's overarching guidance and framework for how we align, in a deliberate manner, the multiple ways by which we develop our people through experience, education, training, and personal development. The latter element, personal development, entails cultivating self-reflection, critical thinking, moral growth, and lifelong learning—areas of leader development that have garnered little, if any, systematic attention in the Navy writ large.

The *Navy Leader Development Strategy* further describes the "Leader Development Outcomes" (LDOs) that connect education, training, experience, and personal development, enabling their systematic alignment in order to optimize Navy leader development. The LDOs are the character attributes, behaviors, and skills expected of Navy leaders—enlisted and officer—as defined for specific career-transition points. They set the leader expectations for each of us at all ranks, and they will be integrated throughout the Leader Development Continuum. Foundational LDOs are included in the *Navy Leader Development Strategy;* expanded LDOs for enlisted personnel, warrant officers, and commissioned officers were approved by the Vice Chief of Naval Operations, Admiral Mark Ferguson, in August 2013.

The CNO is leading this charge. The Leader Development Continuum Council (LDCC)—a body of key stakeholders at the flag and master-chief level, chaired by the President of the Naval War College—is guiding the principal processes necessary for establishing a career-long Leader Development Continuum. The LDCC in turn reports to the Advanced Education Review Board (AERB), chaired by the Vice Chief of Naval Operations. Navy community leaders (type commanders) are charged with tailoring leader development continuums within their communities that integrate the unifying Leader Development Outcomes while also recognizing the specific character and unique needs of each community—a process that is now well under way.

Where do we go from here?

Our first priority in establishing a Leader Development Continuum is to leverage existing programs and structures. Within our Navy there are numerous development opportunities—whether through experience, education, training,

or personal development. These opportunities require aligning, synchronizing, and sequencing to enable systematic and progressive leader development. We are also looking to communities to share best practices; we can learn from each other. Additionally, as gaps in leader development are identified we are pursuing ways to address them. Ultimately, we must be imbued with the mind-set—and operate with the conviction—that developing our people as leaders is central to our warfighting ethos. As the CNO notes in his opening letter in the *Navy Leader Development Strategy,* time associated with rigorous leader development is "complementary" to and "necessary" for the demands of technical and tactical competence. This is the extraordinary culture change we seek.

Realizing this vision for leader development means the Navy must embrace institutional and cultural change. This is a vision that transcends our distinct Navy communities and extends beyond ensuring the mastery of specific technical and tactical skills. Indeed, rethinking the way we approach Navy leader development will filter into everything we do, including career management, evaluation systems, etc. We are preparing the next generation of leaders for three decades into our future. This culture change will take time and effort, but we cannot afford to say that it is too hard or too big, or that there is too much pushback, and not get it done. We have to do what we know is right for our Navy and our Sailors. We have to do the best we can for our people as leaders, or our platforms simply won't matter. Although we know that competence reigns supreme, we also need to focus on developing leaders of character on the basis of our ethos and the unique qualities of naval service to strengthen the naval profession. Character is as much a core competency as technical and tactical prowess.

A final point. At the core of the profession of arms is a sense of service. By improving our leader development practices—and making the positive changes in our personnel and institutional systems that it will certainly engender—we will renew our commitment to the naval profession and the development of our Sailors as leaders who exemplify the highest standards of service. The *Navy Leader Development Strategy* states that "there is no higher priority than to develop effective Navy leaders." We owe it to our Sailors, our service, and our nation to ensure that our actions and our efforts fully reflect that priority.

REAR ADMIRAL JAMES KELLY, USN (RET.)

Rear Admiral Kelly is dean of the College of Operational and Strategic Leadership at the Naval War College in Newport, Rhode Island. A former Naval Flight Officer (at his retirement in 2009 he was the longest-serving Naval Flight Officer on active duty), he commanded Attack Squadron 115, USS Sacramento *(AOE 1), USS* Constellation *(CV 62), Carrier Strike Group 5, and Task Force 70.*

Rear Admiral Walter E. "Ted" Carter, Jr., became the fifty-fourth President of the U.S. Naval War College on 2 July 2013. A native of Burrillville, Rhode Island, he graduated from the U.S. Naval Academy in 1981, was designated a Naval Flight Officer in 1982, and graduated from Top Gun in 1985.

His career as an aviator includes sea assignments in Fighter Squadron (VF) 161, on board USS Midway *(CV 41); in VF-21, the "Freelancers," on board USS* Independence *(CV 62); in Carrier Air Wing Five (CVW 5); in command of the VF-14 "Tophatters"; and as executive officer of USS* Harry S. Truman *(CVN 75), culminating in command of USS* Camden *(AOE 2) and USS* Carl Vinson *(CVN 70). Subsequent fleet command assignment includes service as Commander,* Enterprise *Carrier Strike Group (CSG 12).*

Carter has served in numerous shore assignments, including VF-124, the "Gunslingers"; in Fighter Wing Pacific; as executive assistant to the Deputy Commander, U.S. Central Command; as chief of staff of the Joint Warfighting Center, U.S. Joint Forces Command; as Commander, Joint Enabling Capabilities Command; and as Director, 21st Century Sailor Office (N17).

He has led strategic projects, including the disestablishment of U.S. Joint Forces Command, and most recently, was charged with leading Task Force RESILIENT.

He is the recipient of various personal awards, including the Defense Superior Service Medal (two awards), Legion of Merit (three awards), Distinguished Flying Cross with Combat V, Bronze Star, Air Medal (two with Combat V and five strike/flight), and Navy and Marine Corps Commendation Medal (two with Combat V). He was also awarded the Vice Admiral James Bond Stockdale Leadership Award and the U.S. Navy League's John Paul Jones Award for Inspirational Leadership and was appointed an Honorary Master Chief by the Master Chief Petty Officer of the Navy.

He has accumulated 6,150 flight hours in F-4, F-14, and F-18 aircraft and has made 2,016 carrier-arrested landings, the record among all active and retired U.S. naval aviation designators. He has also flown 125 combat missions in support of joint operations.

[Navy's Leader Development Continuum] marks a significant starting point for the Navy and . . . full implementation will span generations.

THE NAVAL WAR COLLEGE is a multifaceted joint military academic institution, in support of the naval profession, composed of resident education for U.S. and international officers and focused on maritime research, regional studies, distance education, war gaming, and education/programs at the operational level of war. Each of these intricate areas has unique programs and initiatives, but their common underlying theme is their ability to educate our future leaders and to teach them to think strategically and operationally. Educating leaders is conducted not only at the War College but also at our off-site locations around the country, and the research products generated are world renowned. I would like to bring your attention to a new area of focus to which the War College has significantly contributed. Although it is in its early stages, I would classify this work as potentially the greatest enhancement of our Navy's professional development since John Paul Jones helped to establish it during the American Revolution—the Navy's Leader Development Continuum (LDC).

In the fall of 2011, shortly after Admiral Jonathan Greenert became our thirtieth Chief of Naval Operations, he tasked the Naval War College (NWC) to help him in executing his vision for a more detailed and involved Leader Development Continuum. Being a visionary leader, he necessitated that the newly formulated LDC encompass all Sailors from E-1 to O-10 and that it become an integral part of a comprehensive lifelong learning strategy, aligning experience, training, education, and personal development during an individual Sailor's career.

The rigorous process used to develop the strategy was led by the NWC's College of Operational & Strategic Leadership. Initial analysis by the core group assigned to work this project, aided by faculty from the U.S. Naval Academy and

the Center for Personal and Professional Development, found that the Navy was, in effect, on a course with no well-defined plan. There was no published strategy to guide Navy leader development. Subsequent research revealed that while there had been much written on the subject of Navy leadership, the development of individual Sailors as leaders was assumed to be a naturally occurring process and was not deliberately designed to achieve the outcomes desired.

To ensure that Navy-wide input was received, the Leader Development Continuum Council was established to guide the effort. Chaired by the President, Naval War College, it was composed of flag officers at the one-and-two-star level; command master chiefs, who represented the fleet; experts from the training and education elements of the Navy; the Bureau of Naval Personnel; and several type commanders who had responsibilities for community management (such as Naval Air, Submarine, Surface, and Info-Dominance Forces). It was supported by military and Navy civilian experts at the O-6-and-below level. It also included support from a number of professional academics from NWC, the Naval Academy, and elsewhere who were experienced in leader development.

After many months of intense analysis and fleet-wide discussion, the *Navy Leader Development Strategy* was published in January 2013 as the first step in an effort to define a more deliberate methodology to develop each Sailor into a leader for the future. In publishing the document, Admiral Greenert noted: "The purpose of this strategy is to synchronize the Navy's leadership and strengthen our naval profession by providing a common framework for leader development —regardless of community—that is comprehensive in scope and enduring."

This strategy is based on specific outcomes that are identified for various ranks as an individual progresses through his or her career. It stresses the primacy of the profession, being a Sailor, as an individual's first responsibility, followed closely by a focus on specialty qualifications (such as aviation, surface warfare, etc.). The overall strategy is agnostic as to designator or rating and relies on four core elements to develop each Sailor as an individual leader: experience, education, training, and personal development. Each of these core elements has a specific function:

- *Experience* is the principal means by which we develop leaders through practical application and learning. Experience builds resilience and confidence through success as well as failure, and [it] fosters adaptation and innovation, while also reinforcing what was learned through education and training.

- *Education* inculcates the fundamental tenets of Navy leadership, broadens the understanding of the naval profession, imparts advanced knowledge, enhances critical thinking, and fosters intellectual and character development. Education also serves to contextualize past experience to enable the application of new learning

> to future assignments, cultivate adaptive leader abilities, and provide methods for exploring and addressing unknowns.

- *Training* develops role-specific leadership skills and builds confidence and competence.

- *Personal development* focuses attention on individual strengths and weaknesses, enables personal evaluation, furthers reflection on Navy and personal values, and contributes to lifelong learning, diversity of thought, and moral growth. Personal development also includes performance evaluation, coaching, counseling, and mentoring.

Navy leadership recognizes that this strategy marks a significant starting point for the Navy and that full implementation will span generations. It is a long-term effort, and as we enter the fourth decade of an "all-volunteer" force, the strategy recognizes the need to develop deliberately each individual as a member of the naval profession. Unlike the commercial sector, the Navy must internally grow and nurture our future leaders. It is also important to recognize that this strategy is not a contractor-generated plan but rather a program developed entirely within our Navy family.

The Navy now has the vision and clear direction to enable a comprehensive leader development plan with community leaders. This effort has become more than just a tasking: rather, it is a journey that will encompass generations to come, as the Navy's leadership is committed to developing the leaders we need to address the challenges we will face in the decades ahead.

WALTER E. "TED" CARTER, JR.
Rear Admiral, U.S. Navy
President, Naval War College

Dr. Brightman is professor and director of applied research and analysis in the War Gaming Department of the Naval War College, in Newport, Rhode Island. He holds a doctorate in educational leadership and three master's degrees (in holistic counseling, holistic leadership, and criminal justice administration) and is a certified clinical trauma professional. He is currently engaged in advanced study at the Assisi Institute of Brattleboro, Vermont, in the area of archetypal pattern analysis and its therapeutic application to individuals and systems.

Ms. Dewey served as a student research assistant in the Office of the Dean of Academic Affairs at the Naval War College from 2011 to 2013 and received her MA in holistic counseling from Salve Regina University, in Newport, in May 2013.

TRENDS IN MODERN WAR GAMING

The Art of Conversation

Hank J. Brightman and Melissa K. Dewey

> *Now the great secret of its power lies in the existence of the enemy, a live, vigorous enemy in the next room waiting feverishly to take advantage of any of our mistakes, ever ready to puncture any visionary scheme, to haul us down to earth.*
>
> <div align="right">NAVAL WAR COLLEGE, WAR GAMING DEPARTMENT</div>

Lieutenant William McCarty Little—a war-gaming visionary—was truly a man ahead of his time.[1] Although physically sight impaired and medically retired from active naval service, he opted to use his ideational vision and keen mind to support the Naval War College, in Newport, Rhode Island, during its first few years of operation after its founding in 1884. Initially an unpaid volunteer, he was appointed in 1887 as a member of the faculty, where he developed two-sided war gaming at the College—a construct that is still in use at the state-of-the-art facility that today bears his name.

Often touted as the father of modern war gaming, McCarty Little, who served on the faculty until 1915, understood that meaningful force-on-force gaming can occur only if two conditions are satisfied.[2] First, decision makers must be provided with a suitable environment (referred to in the language of fields theory as a "safe container") within which to develop strategies and contingencies.[3] This container (i.e., a "setting in which the intensities of human activity can safely emerge") must be more than simply a secure physical gaming space.[4] Indeed, it must afford players intellectual security—a mechanism for sharing ideas and perspectives in a nonjudgmental, attribution-free environment, whatever inner contradictions and inconsistencies may arise during the decision-making process.[5] Second, he set out to clarify and expand issues beyond the content of a particular game to garner deeper insights into complex problems. McCarty Little appreciated the power to that end of dialogue, as well as the role of group processes in both micro-level systems (for example, tactical unit actions) and operational-level systems, such as battle fleets.

Like modern-day systems thinkers, working both intuitively and intellectually, he knew that it was important to understand the pieces that contribute to the whole system, not by dissecting them into individual parts and seeking to reaggregate them, but rather by considering the entire messy, often obfuscated processes that characterize systems such as naval warfare taken as a whole.[6] For example, although much of his initial work was highly detailed and tactical, McCarty Little introduced innovations in broader thinking, such as visual blocking screens "to restrict the fields of view of the players to those portions of the area of operations that corresponded approximately to real-world conditions."[7] McCarty Little's development of two-sided gaming emerged from a desire to foster broader thinking and discussion while retaining detailed records of ship positions and statuses at the end of each move for further study and discussion.

Both McCarty Little and Nimitz understood that the value of war gaming resides neither in its predictive abilities nor in its tangible move outcomes. Rather, the true power of gaming may be found . . . in the dialogue that occurs within the . . . game cell.

His ability to look beyond the notion of reductionism—the preeminent philosophy in scientific thought during his lifetime—and consider broader complex problems without breaking them into pieces is remarkable, especially when one considers the sociopolitical environment in which his holistic concept emerged—the latter portion of the Industrial Revolution. In the late nineteenth and early twentieth centuries, naval culture was at a crossroads. Although steeped in the traditions of the age of sail, navies had already begun trading their rich lore for the technological discipline of steam power and battleships. The last of the U.S. *Sabine*-class sailing frigates had been built. America's navy had begun to embrace a new paradigm, firmly entrenched in the machine world, as well as a stalwart desire to seek more technologically focused solutions, such as enhanced communications and command and control.[8]

McCarty Little understood the importance of examining the deliberative processes of an adversary. He considered the dialogue involved in two-sided gaming to be an essential component in achieving victory at sea.[9] Long after his time, however, beginning with the Navy Electronic Warfare Simulator in 1959 and extending into the highly technical, simulation-dependent Global War Games of the 1980s and 1990s, Naval War College gaming tended to focus on the analytical outcomes of player actions rather than on pursuit of McCarty Little's view that an understanding of the deliberative processes employed by adversaries is at least as important as the objective data that games generate.[10] Today McCarty Little's emphasis on exploring adversary thinking and decision

making remains a most appropriate but, as a result, perhaps inadequately considered mechanism for informing decision makers in today's decidedly more complex warfare environment.

WAR GAMING IN THE AGE OF REDUCTIONISM

Much of war gaming's pedigree is to be found in the Enlightenment thinking of Francis Bacon, René Descartes, Isaac Newton, and Immanuel Kant—specifically, in the reductionist premise that the world functions as one great machine. This perspective contends that complex organisms or processes can be "taken apart, dissected literally or figuratively, and then put back together without any significant loss. The assumption is that the more we know about the workings of each piece, the more we will learn about the whole."[11] One early example can be found in a rudimentary war game developed by Dr. C. L. Helwig in 1780. His chess-like board comprised multicolored squares representing various types of terrain. It was coupled with a single piece representing "a large body of soldiers or organized combat units."[12] Helwig's game also included a referee, or umpire, in an effort to assess impartially the players' moves. His process was the precursor of far more complex war-game adjudication processes that are used in two-sided gaming today.

Moving beyond this form of military chess, a Scotsman, John Clerk, developed a demonstrative process for exploring the arrangement of ships, fleets, and lines of battle, a scheme that he ultimately published in both preliminary and revised forms, in 1779 and 1782, respectively. Although Clerk was not a naval officer (indeed he had never been to sea), his efforts were well received by the military establishment. Especially welcome was his analysis of game data pertaining to the relationships between wind and ship maneuvers and his assessments of battle damage resulting from naval guns.[13] While some specialists today contend that Clerk's work was not war gaming per se but essentially a modeling or simulation tool, his findings did make their way into actual combat operations; they were used by Lord Nelson himself during the British victory at Trafalgar in 1805.[14]

More importantly, Clerk's efforts were grounded in linear, deductive thinking and in the application of mathematics and quantitative analysis to military problem solving. By the 1820s, such military thinkers as the Prussian war counselor Baron von Reisswitz and his son Lieutenant Georg H. R. J. von Reisswitz had developed game boards, featuring realistic terrains and ranges, and employed complex adjudication tables and umpire-initiated dice rolls to assess the efficacy of player actions and the infliction of battlefield casualties.[15]

The perceived value of these games often stemmed from military leaders' desire to provide experiential opportunities for their officers without encumbering themselves with the expense and liabilities normally associated with field

training. Moreover, to enhance the perceived accuracy of outcomes, new quantitative tools (that is, simulations) were developed.[16] These tools were pursued by the West in the ever-more-technology-driven world of the Industrial Revolution; the result was the use of games more detailed and restrictive than strategy games of the past.[17] For example, in the past, chess players had ultimately relied on their own cognitive thinking processes—experience, imagination, and creativity —to defeat an opponent. Quantitatively derived efforts at modeling, simulation, and adjudication rapidly overtook, and in some cases replaced, these thought processes. As Jung aptly noted, "in the West, consciousness has been developed mainly through science and technology—not through art, social interaction, cultural development, or spirituality."[18] Imagination was rapidly replaced by technological prowess.

> *Indeed, failure to distinguish between the utility of game theory and that of war gaming may result in the conflation of qualitative problems with quantitative solutions—a possible recipe for strategic disaster.*

The use of Lanchester equations at the height of the First World War made clear the inherent flaws of seeking to reduce human conflict to the sum of its parts. In 1916, Frederick Lanchester, a British mathematician, sought to apply two equations—the *law of squares* to "'aimed fire' (e.g., tank versus tank) and the *linear law* to 'unaimed fire' (e.g., artillery barraging an area without precise knowledge of target locations)."[19] As is the case with many simulations, Lanchester's equations failed to consider qualitative factors, such as "the effects of terrain or the differences in competence between equally sized and equipped forces of different nations."[20] This tendency to avoid qualitative inputs or, worse, mask them as seemingly numerically weighted (i.e., quantitative) data sets is an example of what has proved to be a recurring problem throughout the history of linear deductive thinking.[21]

In fairness, some linear, deductive processes rooted in Western thought can be useful in thinking through complex problems, especially when such a thinker is confronted with another Western adversary or one who is simply willing to play by a Western-bounded rule set. However, as Ian McGilchrist notes in a treatise on the differences between the Western and non-Western brain, "People in the West characteristically overestimate their abilities, exaggerate their ability to control essentially uncontrollable events, and hold overoptimistic views of the future."[22] Indeed, in such circumstances, there is actually very little difference between formal war gaming and engagement in such modeling and simulation processes as game theory.

While it should be considered a valuable decision-making tool, game theory is in fact the ultimate expression of Cartesian-Newtonian thinking. It is an effort to

resolve on a quantitative basis often highly complex problems involving multiple stakeholders and outside interests. Nowhere is the use of game theory more subject to bias than in situations where a Western-thinking player is confronted with a non-Western-thinking opponent.[23] There are essentially two types of game-theory models: the simple-form game (SFG) and the extensive-form game (EFG). SFGs have two players, each of whom seeks the highest possible payoff at the end of a simultaneous move. These payoffs are numerically weighted and must be the same for both players. EFGs, in contrast, consist of at least two players engaged in multiple move-for-move exchanges. In an EFG, because each player's preferred payoff can be achieved only at the conclusion of the game (as opposed to after just one move in the SFG), participants are generally less concerned with intermediate payoffs than with the ultimate one.[24]

Of course, defining mutually agreed payoffs in the EFG is far more complicated than in the SFG, because the players must consider both short-term and long-term payoff values. Compounding this challenge are differences in how players perceive the values of these payoffs—especially, again, when a Western player is engaged in a game against a non-Western player.[25] Moreover, as time progresses the EFG becomes susceptible to influences from outside forces. These forces affect the willingness of both players to adhere to previously established rules. Therefore, the overall stability of the game may be decreased. Eventually players may engage in corrupt practices, such as offering side payments to other players in an effort to conclude the game.[26]

MISTAKING GAME THEORY FOR WAR GAMING

During the interwar years, from 1919 to 1939, the U.S. Naval War College, in Newport, Rhode Island, engaged in a variety of war games and exercises against a variety of named adversaries and near-peer competitors. These games underpinned the development of a series of planning documents referred to as the "rainbow plans."[27] The most famous was Plan ORANGE, which explored possible strategies and contingencies in a protracted conflict with Japan. By 1930 the Naval War College had "made its exercise a grand production that included navy and marine faculty and student officers from Newport and Quantico."[28] The data garnered from the games and exercises (along with those from other activities) associated with the rainbow plans made them collectively one of the most successful applications of naval war gaming in American history.[29] Indeed, Fleet Admiral Chester Nimitz remarked in 1960 that the myriad explorations of Japanese tactics, maneuvers, operations, and strategies identified through gaming Plan ORANGE were to prove incredibly valuable to senior decision makers.

Unfortunately, Nimitz's comments were misconstrued at the time and continue to be misunderstood to this day.[30] While Plan ORANGE undoubtedly assisted

the United States and its allies in planning and execution during the Second World War, its value did not lie in its quantitative nature.[31] War games are not experiments. Even if such events are repeated, they lack sufficient controls to be generalized. Neither are they models or simulations yielding predictive behavioral outcomes. If they were, game-theoretic models (such as SFGs or EFGs) could be used instead. Toward this end, one scholar of game theory notes, "There are fundamental reasons to be concerned about the possibility of accurately describing realistic situations exactly by [game theory] models [because] practical modeling difficulties arise when players' beliefs are characterized by subjective probabilities."[32]

Although descriptive quantitative techniques—for example, such basic statistical tools as *t*-tests and analyses of variance (ANOVAs) on Likert-style, survey-based responses to determine participant cohesion or disparity between player cells—may be used in analyzing players' decision-making processes, the bulk of data generated from war games is qualitative. Qualitative data can be grouped, binned, and discussed, but they are not amenable to the kind of quantitative modeling used for predictive purposes in the natural sciences. As Dr. Kenneth Watman, a former director of the War Gaming Department at the Naval War College, writes, "War games can be a powerful way of developing questions, issues, and provisional insights that must then be analyzed more vigorously with different methods. In this sense, war games can be an essential precursor to the process of [quantitative experimentation]."[33] Thus, it is important to understand the differences in appropriateness between basic quantitative modeling tools (like game theory) for considering stable, readily quantifiable problems and qualitative decision making for the far more complex issues found in many war games.

Indeed, failure to distinguish between the utility of game theory and that of war gaming may result in the conflation of qualitative problems with quantitative solutions—a possible recipe for strategic disaster.[34] One such instance involved Secretary of Defense (1961–68) Robert S. McNamara and his quantitatively oriented "whiz kids," whose failed efforts to prosecute a war in Southeast Asia were founded in a vast overextension of the inferentiality and generalizability of the findings of their parametric models of prediction.[35] The whiz kids' models could not account for qualitative differences between the United States and North Vietnam and their respective desired payoffs and end states, because such differences "cannot be comprehended by linear models."[36]

The American physicist and author Fritjof Capra notes that "the process of model making consists of forming a logically consistent network of concepts to interconnect the observed data [and] . . . to gain precision, and to guarantee scientific objectivity by eliminating any reference to the observer."[37] Unfortunately, with respect to military conflicts like the Vietnam War, models fail on

two accounts. First, there are myriad inputs, both qualitative and quantitative, that must be considered in their construction, many of which negate the use of linear equations or parametric statistical techniques. Second, since at least the appearance of Werner Heisenberg's uncertainty principle in 1927, successive generations of quantum theorists have moved well beyond anecdotal claims into the realm of empirical evidence to support the connection between observer and subject, even in the most tightly controlled experiments.[38] If, that is, pure experimentation and predictive modeling are influenced at the micro-level simply by observation, Watman's quoted assertion about war-gaming technique's being a precursor to analysis within the social sciences arena, not an analytical technique in its own right, is wholly appropriate.

War gaming is not about the development of products purely for analysis. Rather, it must also focus on process—the meaningful interactions among and between participants as they wade through waist-high "fields of conversation" and strive for shared meaning.[39] Rather than seeking to deconstruct highly complex problems and processes, gaming should seek to explore a "holistic worldview, seeing the world as an integrated whole rather than a dissociated collection of parts."[40]

CASE IN POINT: THE CURIOUS CASE OF CANS

In March 2011, the Naval War College's War Gaming Department was tasked by an external sponsor with developing an implementation strategy for the U.S. Strategic Command's (USSTRATCOM's) Concepts & Analysis of Nuclear Strategy (CANS) project. USSTRATCOM aspired, through CANS, to develop a quantitative probability tool for exploring issues of nuclear deterrence and escalation.[41] Specifically, the tool had been designed to provide decision makers with predictive values for how strategies and contingencies might fare within the nuclear domain; the meat of the simulations involved was to be garnered through the assignment by modelers of "values to the pair of parameters that show the causal strength . . . for each directed link that connects pairs of nodes."[42]

As discussed above, the transposition of qualitative inputs into seemingly quantitative values is in itself a flawed approach, being subject to the biases of the modeler. However, many senior military decision makers, trained in the natural sciences (e.g., mathematics or chemistry) or engineering, are quick to embrace these outputs as offering more measurement reliability and validity than do "squishier" terms, phrases, and concepts yielded by qualitative techniques, such as grounded theory, ethnography, case studies, or content analysis.[43] CANS, in fact, sought to model complex strategic nuclear deterrence and escalation dynamics with qualitative data that were masked as quantitative and to produce information sets that were portrayed as complete. Ultimately, the result could be

a false sense of security in the value of the tool's predictions of adversary actions in the nuclear arena.[44]

Both McCarty Little and Nimitz understood that the value of war gaming resides neither in its predictive abilities nor in its tangible move outcomes. Rather, the true power of gaming may be found, both experientially and analytically, in the dialogue that occurs within the "safe container" of the game cell. Plan ORANGE generated a vast series of events during which seemingly disparate elements of the U.S. Navy and Marine Corps (and to a lesser extent Army air and ground forces, through cooperative efforts with Fort Leavenworth, Kansas) worked together to develop common goals and objectives.[45] One scholar of strategic management refers to this process as the "necessity of complicating an organization" so that it can "develop a sufficiently varied account of the outside world that will make signals meaningful and that can be shared among its members."[46] In short, Plan ORANGE fostered group cohesion, which a distinguished psychiatrist contends inevitably yields the most meaningful outcomes.[47]

EXPLORING THE GROUP COHESION PROCESS IN WAR GAMING

In the late 1950s and through the early 1960s, at about the same time that Francis McHugh at the Naval War College was writing about the technical aspects of war gaming in his seminal *Fundamentals of War Gaming,* the social psychologist Edwin Cohen, under contract for the Department of the Army, was examining the role and value of group cohesion. Much of the analytic value obtained from war-gaming data is a function of the safe container provided for the players and the phenomenological event of working together to resolve complex issues. Players cannot be separated from the story of the game as it unfolds, and this shared experience provides them with a common bond.[48]

Cohen defines this bond as group cohesion, "a dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its goals and objectives."[49] Over time, a group reframes the individual distinct characters of its members into a collective identity that embodies the beliefs of the group as a whole.[50] Factors such as repeated exposure to an event or process influence the degree to which members of a group feel connected as they work toward the common purpose. Group cohesion plays an important role in achieving military objectives: "Those armies that have enjoyed the highest degrees of cohesion and combat effectiveness in the past have achieved such success" in part because members become "personally involved in the group task, and perceive that the team shares a common goal of accomplishing the task, facilitating the cohesion-performance relationship."[51] As the degree to which individuals feel involved in carrying out a task increases, the likelihood of success also increases. As individuals work with one another in a group, members often flourish as they

are positively influenced by surrounding individuals. The more individuals feel involved and needed in the group, the more they will likely invest in helping achieve the group's goal.[52] Indeed, individual specialties must "come together in convocation," and this convocation yields "conversation."[53] It is this conversation that, as McCarty Little discovered more than 125 years ago, is at the heart of the war-gaming experience.

Myriad games conducted at the Naval War College during the past five years have demonstrated that rigidity—marked by highly structured and formally organized relationships—does little to engender conversation or foster cohesion. Whether this rigidity is rooted in an autocratic leader or restrictive policies or instructions, it often proves detrimental to effective working relationships.[54]

> *While it should be considered a valuable decision-making tool, game theory is in fact the ultimate expression of Cartesian-Newtonian thinking.*

One such case study in the valuable role that cohesion may play in executing a successful strategy can be found in the 2008 Final Destination 2 (FD2) game-design test. Against a background of six, highly complex homeland-security/homeland-defense vignettes, each event building on the one before, FD2 sought to explore two specific issues related to group process and cohesion. The first of these issues was to determine whether a relationship could be identified between the quantity of information provided to a player cell, perceived group cohesion, and the cell's internal decision-making process while countering an asymmetrically thinking adversary. The second issue was to examine possible relationships among the quantity of information provided to a player cell, perceived group cohesion, and the cell's ability to develop courses of action at the operational level of war.

Two player cells were provided the same vignettes, each cell consisting of personnel comparable in terms of age, race, gender, education, occupation, personality style (based on the Keirsey temperament sorter), and years of experience.[55] However, cell number one was provided with all the data it desired, as expressed by its requests for information (RFIs) throughout the game. Cell two was afforded only limited responses to its RFIs. Neither cell was aware that there were differences in the quantity of data being provided.

FD2 informed the Naval War College's war-gaming faculty that player access to as much information as desired might not be optimal. For example, cell two (which did not receive responses to all its RFIs) conducted moves at a broader operational level than cell one and was more effective in using inductive thinking to counter the seemingly disparate threats presented in the game. Moreover, cell two's individual responses for both the open-ended and Likert-scale (i.e.,

"strongly disagree" to "strongly agree") qualitative surveys suggested a greater level of group cohesion than in cell one. This trend appeared immediately after the first move and continued throughout game play. For its part, cell one focused its moves tactically and emphasized deductive thinking (even when its hypotheses were not bearing fruit); its members, as indicated by survey responses, perceived that they had achieved little group cohesion throughout game play.

This game did not *prove* that there is a relationship between quantity of information desired, group cohesion, and success in combating asymmetrical threats. Rather, it provided decision makers with useful insights into processes and practices in a way that would not have been possible using game theory or linear modeling.

GAMING COMPLEX ISSUES

The modern U.S. Navy carries out the most diverse missions of any maritime service in the world.[56] Given the complexity of these assignments, an ability to function within a large, systemic network comprising micro-level groups is essential. On a daily basis, the Navy not only works in the Joint Staff environment but cooperates with the Department of State, nongovernmental organizations, and numerous international stakeholders. Therefore, it is imperative that decision makers move beyond traditional, quantitative product–driven, symmetrical force-on-force games toward qualitative, process-oriented games—toward games that will allow "interested parties to work *on* the system, and [allow] everyone to recognize how they fit *in* the system."[57] Games must explore big, multifaceted, messy problems without external pressure to distill them down to their simplest parts. Such games are indeed possible, as evidenced by the success of the July 2010 Irregular Challenges game conducted at the Naval War College.

The overarching purpose of the 2010 Irregular Challenges game was to help the Navy better understand the complexity of problems it could one day face in unstable maritime regions and address better how it might respond. Unlike in the games of the nineteenth and twentieth centuries, which reduced issues to their essence (taking, that is, a reductionist approach), both the game designer and lead analyst for Irregular Challenges were tasked with exploring conditions such as economic strain, public health issues, population increases, natural resource scarcity, and climate change. The game team was further directed to examine how these variables could potentially stress littoral regions and coastal environments around the globe. In addition, "prospective catalysts of instability" (crime, piracy, drug and human trafficking, extremism, and so on) were examined relative to these conditions.[58]

A wide range of academicians, researchers, nongovernmental organization officials, military personnel, and interagency individuals (from the Department of

State, the U.S. Agency for International Development, and the like) were provided "with an environment to explore and appreciate the complexities of decision-making when faced with maritime instability–oriented irregular challenges."[59] The Irregular Challenges 2010 game afforded participants a systems-thinking perspective focused on decision-making processes rather than specific outcomes in areas such as movement of forces, acquisition, and logistics. It offered them an opportunity to view the world differently, "to move from a reactive stance—in which [navies] merely respond to events—to an intentional or creative one, in which [they] can design systems that produce sustainable results."[60] It also fostered cohesiveness among the participants (based on Likert-scale and open-ended survey responses), along with, at the completion of the game, a sound analytical product. In short, it was both an experiential and an analytic success.

Like modern-day systems thinkers, [McCarty Little] . . . knew that it was important to . . . [consider] the entire messy, often obfuscated processes that characterize systems such as naval warfare taken as a whole.

The 2010 Irregular Challenges game was a one-sided activity in which players addressed security issues in a fixed scenario, but it set the stage for the two-sided Maritime Stability Operations Game (MSTOG) the following year. Held at the Naval War College in December 2011, the MSTOG "explore[d] how to conduct maritime stability operations (MSTO) in order to prevent and respond to instability."[61] Building on the 2010 Irregular Challenges event, the MSTOG focused on three research areas: emerging MSTO doctrine, future force structure, and the overall maritime strategy relative to MSTO.

Within the safe container of the gaming environment, players were afforded the opportunity to engage in dialogue about a notional, complex, and dynamic security environment requiring "a range of maritime capabilities for contributing to stability and responding to instability."[62] Through their participation in shared phenomenological experience, players reported that they were better able to understand processes including transitioning from steady-state engagement to crisis response while building host-nation capabilities, deterring near-peer challenges, and addressing a range of irregular threats. As group cohesion built up, players identified innovative ways to improve Navy interoperability with U.S. Marine Corps, Coast Guard, special forces, and multinational partners and to foster better practices for collaborative planning and coordination with country teams, multinational partners, and nongovernmental organizations.

Postgame analysis of allied and adversary comments and actions was performed using a variety of established, qualitative techniques (i.e., grounded theory, content analysis, and survey research) to "triangulate" the game's findings.

It determined that forward presence represented a critical requirement in three mission areas: maritime governance and participation, foreign humanitarian assistance, and deterrence. It is unlikely these insights would have emerged had reductionist, quantitative gaming processes been employed rather than the two-sided approach, marked by exploration of complex "systems of systems," developed for this event.

Fields theorist Kurt Lewin urges that we not be "blinded by philosophical considerations, an atmosphere which recognizes only physical 'facts' as existent in the scientific meaning of that term which has now outlived its usefulness."[63] Games such as Final Destination 2, Irregular Challenges, and the Maritime Stability Operations Game point out for war-gaming professionals a path that will return them to the explorative power of gaming envisioned by McCarty Little in the late nineteenth century—a perspective that values both experiential processes and analytical outcomes and understands that these domains are not mutually exclusive.

Gaming complex issues involves the realization that despite well-intentioned efforts to create empirical boundaries between outside forces, players, and the analytic products generated during events, war gaming is not experimentation; there is a continual cycle of influencing others and being influenced. Indeed, as McCarty Little understood, it is talking and listening at the edge of the players' boundaries and resistances, the "gestalts"—emergences of new patterns from new inputs—at which shifts in beliefs, judgments, or actions occur, that prove the most valuable in garnering insights useful to senior decision makers.[64]

NOTES

1. Epigraph from *War Gaming Department Brochure* (Newport, R.I.: Naval War College, 2009), p. 1.

2. For the purposes of this article, a war game is defined as a simulation involving two or more opposing forces using rules, data, and procedures designed to depict an actual or assumed real-life situation. Joint Chiefs of Staff, *DOD Dictionary of Military and Associated Terms,* JP 1-02 (Washington, D.C.: 1987, amended through 15 April 2013), p. 393.

3. For "safe containers," Kurt Lewin, *Resolving Social Conflicts & Field Theory in Social Science* (Washington, D.C.: American Psychological Association, 2008), pp. 245–80.

4. For the quoted phrase, William Isaacs, *Dialogue and the Art of Thinking Together* (New York: Doubleday, 1999), p. 242.

5. Ibid., p. 244.

6. Margaret J. Wheatley, *Leadership and the New Science* (San Francisco: Berrett-Koehler, 2006), p. 10.

7. Francis J. McHugh, *The United States Naval War College Fundamentals of War Gaming* (Newport, R.I.: Naval War College, 1966; repr. Naval War College, 2012) [hereafter McHugh, *Fundamentals of War Gaming*], pp. 102–103.

8. William H. McBride, review of *Command at Sea: Naval Command and Control since*

the Sixteenth Century, by Michael A. Palmer, *Journal of Military History* 71, no. 1 (January 2007), pp. 275–76. For the "machine world," Margaret J. Wheatley, *Finding Our Way: Leadership for an Uncertain Time* (San Francisco: Berrett-Koehler, 2007), pp. 16–21.

9. McHugh, *Fundamentals of War Gaming,* pp. 56–61.

10. Ibid., pp. 2–3.

11. Wheatley, *Leadership and the New Science,* p. 10.

12. Peter P. Perla, *The Art of Wargaming* (Annapolis, Md.: Naval Institute Press, 1990), p. 18.

13. Ibid., pp. 19–21.

14. For the contentions of gaming professionals, ibid., p. 21.

15. Lewin, *Resolving Social Conflicts & Field Theory in Social Science,* pp. 270–80.

16. McHugh, *Fundamentals of War Gaming,* pp. 101–103.

17. Ibid., pp. 104–11.

18. Carl G. Jung, *The Earth Has a Soul: C. G. Jung on Nature, Technology & Modern Life,* ed. Meredith Sabini (Berkeley, Calif.: North Atlantic Books, 2008), p. 11.

19. Paul K. Davis, *Aggregation, Disaggregation, and the 3:1 Rules in Ground Combat* (Santa Monica, Calif.: RAND, 1995), p. 29 [emphasis supplied].

20. Ibid., p. 31.

21. George B. Vold, Thomas J. Bernard, and Jeffrey B. Snipes, *Theoretical Criminology,* 4th ed. (New York: Oxford Univ. Press, 1998), p. 6.

22. Ian McGilchrist, *The Master and His Emissary* (New Haven, Conn.: Yale Univ. Press, 2009), p. 456.

23. See Hank J. Brightman, "Nash in Najaf: Applying Game Theory to the Iraqi Conflict," *Air & Space Power Journal* 21, no. 1 (Fall 2007), pp. 35–41.

24. See ibid., pp. 35–37.

25. McGilchrist, *Master and His Emissary,* pp. 389–427.

26. Morton D. Davis, *Game Theory: A Nontechnical Introduction* (Mineola, N.Y.: Dover, 1983), pp. 104–105.

27. Michael Vlahos, *The Blue Sword: The Naval War College and the American Mission, 1919–1941* (Newport, R.I.: Naval War College Press, 1980), pp. 113–30.

28. Williamson Murray and Allan R. Millet, *Military Innovation in the Interwar Period* (London: Cambridge Univ. Press, 1988), p. 74.

29. Vlahos, *Blue Sword,* pp. 147–51.

30. For challenges posed by strategic modeling, see ibid., p. 155.

31. Ibid., pp. 9–18.

32. Roger B. Myerson, *Game Theory: Analysis of Conflict* (Cambridge, Mass.: Harvard Univ. Press, 1991), p. 74.

33. Kenneth Watman, "War Gaming and Its Role in Examining the Future," *Brown Journal of World Affairs* 10, no. 1 (Summer/Fall 2003), pp. 52–53.

34. Ben Gilad, *Business War Games* (Franklin Lakes, N.J.: Career, 2009), p. 20.

35. The authors capsulize these terms as efforts to apply the findings of a small population to the broader world around us—especially for predictive purposes.

36. Thomas J. Czerwinski, *Coping with the Bounds: Speculations in Nonlinearity in Military Affairs* (Washington, D.C.: National Defense Univ., 1998), p. 263.

37. Fritjof Capra, *The Turning Point: Science, Society, and the Rising Culture* (New York: Bantam Books, 1982), p. 376.

38. Leonard Mlodinow, *The Drunkard's Walk: How Randomness Rules Our Lives* (New York: Vintage Books, 2009), pp. 94–103.

39. Isaacs, *Dialogue and the Art of Thinking Together,* pp. 252–90.

40. Fritjof Capra, *The Web of Life* (New York: Anchor Books, 1996), p. 6.

41. More technically, CANS was intended to employ a variety of probabilistic belief nets, or "Bayesian networks," abstracted into "timed influence nets" to represent random variables and causal relationships.

42. Alexander H. Levis, "Time Sensitive Course of Action Development and Evaluation," in *Symposium on Human Modeling for Military Applications, Amsterdam, The Netherlands, 18–20 October 2010* (n.p.: n.d.), p. 4.

43. For "senior military decision makers," Mlodi-now, *Drunkard's Walk,* pp. 124–45.

44. Rufus Isaacs, *Differential Games* (Mineola, N.Y.: Dover, 1999), pp. 307–29.

45. Edward S. Miller, *War Plan Orange* (Annapolis, Md.: Naval Institute Press, 1991), pp. 2–3.

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YOUR BOSS, PLAYERS, AND SPONSOR

The Three Witches of War Gaming

Stephen Downes-Martin

I
n national-security war gaming there are three classes of senior stakeholders whom I call "the three witches"—critical to the success of a game but with the power to affect negatively its quality. These comprise, first, the war-game director's superior and chain of command; second, the senior players within each game cell; and third, the sponsor of the game and that officer's chain of command. Each of these three stakeholders frequently attempts to influence the design of the war game, even during play itself. For two reasons, such attempts amount to inappropriate interference. First, these stakeholders are not (usually) expert in war-game research, design, development, or production. Second, it is a conflict of interest for them to influence the game's design; such interference puts the credibility of the results into justifiable doubt. The director, responsible for delivering a quality game, must manage these three stakeholders throughout design, play, analysis, and postevent reporting to ensure that the game meets the sponsor's national-security-related objectives. Failure to do so puts the war-game director at risk of following the three witches to a fate analogous to Macbeth's.

WHEN LEADERSHIP GETS IN THE WAY

Research into intellectual leadership indicates that it is extremely difficult for individual contributors in a discipline to return to primarily intellectual roles after having been in positions of administrative leadership for any length of time.[1] This does not mean it is "hard to get their old job back" or

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that "it takes time to get back into practice." It means that after they have gotten their old jobs back as individual contributors they rarely perform as well as they did before they took leadership positions—in other words, acting in a significant leadership position often permanently reduces one's ability to perform at a previous job, now being performed by subordinates. This is one reason why the military calls some very senior leaders "general officers"—that is, "generalists"—which is to say, "not expert specialists anymore." They have become resource providers, managers, and leaders, but they are no longer expert at producing or doing what they once did, no matter how expert they once were.[2]

Research also indicates that senior people tend to be overconfident in their ability to control events that are in fact outside their own control, failing to realize the need for adapting their thinking to that reality. Their successful control of past situations leads them into the mistake of believing their competence applies to current situations, especially situations involving a high degree of chance.[3]

Even if these critical stakeholders were once war-gamers or war-gaming experts, time spent in the interim leading and managing organizations (which is what senior people generally do) instead of actually delivering war games results in decayed specialist knowledge and lapsed expertise. They have been consumers rather than producers of war games for too long.

There is also the problem of conflict of interest. Three risk factors have been identified as present in nearly all cases of scientific fraud. The perpetrators "knew, or thought they knew, what the answer to the problem they were considering would turn out to be if they went to all the trouble of doing the work properly; were under career pressure; and were working in a field where individual experiments are not expected to be precisely reproducible."[4] One must accept the possibility that all three factors characterize the stakeholders of any war game that addresses important national-security issues and thus that the stakeholders will have to be prevented from interfering inappropriately with the game's design and thereby be protected from charges of manipulating its results.

The war-game director must learn how to preempt problems with these stakeholders before they arise and what to do if preemption is unsuccessful. To succeed, the director must have three personal characteristics. Two are required for any profession, these being a high degree of professional expertise (in this case, in game design) and the moral courage, integrity, and poise, even charisma, to face down inappropriate interference from seniors—including his or her own superiors. The former trait will provide guidance as to whether the interference is justified or not. The third characteristic is a specific skill—ability to perform "objectives analysis," applied to the specifics of war gaming. Good objectives analysis with the sponsor is a necessary precursor to forestalling problems with all three of the stakeholders.

If the game director fails to display the courage and professional integrity required to manage these three stakeholders and instead follows their advice for the wrong reasons, then despite an initial appearance of all going well, the director will, like Macbeth, eventually end up in a very bad place. Acquiescing to inappropriate demands or advice can be the path of least resistance for the director (and sometimes the senior stakeholders) but comes at the cost of damage to national security and to the reputations of the director and the stakeholders, if the game was worth playing in the first place. The likelihood of this failure is highest when the director does not know enough about gaming or when distorted stakeholder motives are in play. Sponsors who discover later that game results are suspect will blame the directors, and rightfully so, even if it was sponsor interference that created the problem. Morally weak or incompetent directors are in effect gambling that sponsors will not realize that game results are corrupted before one or both of them have moved on to other duties.

THE FIRST WITCH: YOUR CHAIN OF COMMAND

War-game directors tend to be second-guessed by their bosses and other seniors in their chains of command—people ready, perhaps with the best of intentions, to help directors do a job at which the directors, but not they themselves, are expert. Furthermore, they often collaborate with sponsors to second-guess the director, to the point of demanding significant changes to design and execution even during the game itself. I have watched a senior leader in the game director's chain of command and the action officer of the sponsoring organization override the vigorous, analytically based objections of the game director and insist on game design changes in the middle of a major war game. The result was loss of information critical to the sponsor's objectives and inability to correlate information from before the change with that obtained after the change, leading to a serious reduction in the final value of the game products for the sponsor. The senior officers in the two chains of command did not understand the nuances and impacts of the changes, and they did not understand that they were no longer expert in game design and analysis. During game play there is not enough time for the director to educate senior stakeholders about the deleterious effects of midgame changes.

The director's only recourse if this happens during a game is to explain succinctly the likely adverse effects on game validity, the prospect of unknown unintended consequences from breaking the design in the middle of the game, and the necessity of documenting in the game report the source of the changes and their effects. The director then—if directly ordered to do so by the director's own chain of command—proceeds with the changes. The game director can reduce the likelihood of this happening in the first place by performing good objectives analysis with the sponsor and by keeping his or her chain of command informed

of the results of that analysis. All this requires that the director do a good job from the outset, be expert in all nuances of the game and its design, and have the courage to do the right thing for the sponsor.

The conflict-of-interest problems that facilitate intellectual fraud are present for war-game directors and their chains of command. These risks are removed for directors if they have no career stakes in the outcomes of games; if their organizations are "mission funded" (specifically, funding for the game is not under the control of the sponsoring organization); if their chains of command have confidence in their expertise; and if they are authorized by their chains of command to face down inappropriate interference from senior players, sponsors, or their own superiors—and are supported when they do so. War-game directors must be willing to execute their authority and be expert enough to distinguish inappropriate interference from justifiable oversight.

THE SECOND WITCH: YOUR SENIOR PLAYERS

The senior leaders of player cells, the cell "leads," have two roles. In addition to the obvious one of playing the game, they lead their cells in playing the game *as designed*. The game director recruits senior players with the knowledge, experience, and leadership skills needed to lead the cells; ideally, they are expert at their jobs, which are presumably relevant to the game's objectives. Senior players are chosen for their operations experience, not their game-design expertise. Being good at an operational task is not the same thing as being a trained and experienced analyst or an expert war-game designer.

Senior players will be tempted to redesign the game from the moment they turn up until the end of the exercise, but they are extremely unlikely to have the analytic skills to identify the downsides of a last-minute or in-play reworking of a game. Their ideas might have been good back when the games were being designed (or they might not). I have watched a retired three-star cell lead redesign a game during play and thereby seriously damage the quality of results provided to the active-duty four-star who was the sponsor because the director did not have the combination of skill and moral courage to challenge the cell lead on the issue. To claim that such things are matters of seniority is disingenuous. National security deserves better.

One way to avoid this problem is to recruit (not "invite") senior cell leads early, during the design phase, but after objectives analysis. The game director would meet with candidate senior players, explain the sponsor's objectives and game design, and explicitly call on them to lead their cells in playing the game *as designed*. It is at this stage that the game director can usefully incorporate into the design any good ideas the candidate senior players have. The director, however, must be

prepared to reject unsuitable proposals and even recruit different senior players if, in the director's judgment, candidates are unwilling to endorse the objectives and design or commit themselves to playing the game as designed. If for some reason a candidate senior player is simultaneously uniquely necessary to the game, very senior, and inclined to challenge the design to the point of endangering the sponsor's objectives, the director must put the candidate senior player in touch with the sponsor for resolution.

If notwithstanding all these precautions an accepted senior player attempts a redesign during the game, the director must point out that although the changes have obvious merit they interfere with the sponsor's objectives and then request that play be resumed according to the agreed design. If the senior player refuses, the director should bring the game to a halt and engage the command and the sponsor, informing them of the likely deleterious effects of the changes being insisted on and the requirement to document both the changes and their likely effects for the sponsor's objectives. Finally, the game director implements the changes, if directly ordered by his or her own chain of command.

THE THIRD WITCH: YOUR SPONSOR

Ideally, game sponsors bring to the table clearly articulated problems—issues of importance to national security whose elucidation legitimately involves war gaming. All too often sponsors bring instead either the task of implementing a poorly thought-out solution to a problem that has not been articulated (of which, at the fundamental level, a sponsor may even be unaware) or a desire to advocate some preconceived answer. Attempts by sponsors to influence game design in the latter case are clearly a conflict of interest.

There also exist *absentee sponsors,* of two kinds. Some are about to leave their billets, while others delegate games and their decisions almost entirely to subordinates while retaining the right to countermand those officers' decisions late in the timeline.

- First, military officers have limited "shelf lives"—they rotate fairly quickly out of the sponsoring organizations. A war game must be designed, executed, analyzed, and written up, and its results socialized by the sponsor in person, before the sponsor moves on, if the whole exercise is to have any effect. Although most senior officers serve in their billets for a year or two, a game might be initiated only a few months before its sponsor is to leave. If the sponsor plans to be fully engaged in the project, the time available for design, execution, analysis, and reporting is the period remaining until the sponsor's detachment, minus the time needed to use the results to influence the sponsor's audiences.

- Second, senior sponsors, who necessarily delegate most day-to-day game preparations to action officers from their staffs, are often so busy that they leave fundamental decisions to these officers, while retaining the right to change, at the last minute, decisions made or objectives agreed to by them. These principals being disengaged from the projects, their action officers effectively become the sponsors. Unless of sufficient seniority, however, these designees might not have the authority to make serious or speedy decisions, and in addition they might not fully understand the intent of their bosses.[5] In this situation the game director faces the likely risk of seeing the representative's decisions reversed late in the day, thus generating inefficiencies and damaging game quality.

I have had the experience of first being briefed by members of a sponsor's staff who—not believing it necessary for the game director to meet with the principal—explained to me the sponsor's highest-priority objective. I then refused to proceed further until I met the sponsor to confirm it. At the resulting meeting the staff and I heard the sponsor flatly contradict his staff as to what his number-one objective was and explain to me what his priorities really were. A game aimed at what the staff had claimed was the objective would have been completely unsatisfactory to the sponsor.

If sponsors persistently delegate discussions about games and objectives to action officers, it is the rotation dates of the representatives, rather than those of the principals, that mark the end of sponsoring organizations' interest in game results. Such sponsors thereby signal the relative unimportance of the games in their lists of priorities. The director's boss must then decide how important a project is to the gaming organization and whether its priorities for the game are the same as the sponsor's.

WHAT IS TO BE DONE?

Key to managing the three witches to avoid inappropriate interference and the ensuing damage to a game's results is objectives analysis by the game director. The game director must push for a first game-planning meeting with the sponsor *in person,* not just the action officer (however many staff members participate in that first meeting, and however many slides they use to brief the objectives). The game director's boss need not be present. Sponsors' degree of willingness to schedule detailed interviews with directors about proposed game objectives, or the ranks of action officers if the sponsors do not make themselves available, will say much about how serious they and their organizations are about the game. That in turn will influence the level of seriousness and allocation of resources the project deserves on the part of the gaming facility.

The game director's first task, then, is to identify the real objectives and their importance to the sponsor. Remember, the sponsor may be unaware of what these actually are. The approach is to ask four questions:[6]

- "What do you want?" This question is usually answered by sponsors' first communications with game directors' organizations. The sponsors state what they want, and the directors do not argue.

- "Why do you want it?" The game director explains to the sponsor that any objective is broad enough to cover a myriad of subtopics, only some of which would be important in this context. It is necessary to "drill down" to those that are of greatest interest to the sponsor, to ensure the game is focused on his or her priority needs. The process is equivalent to asking for the commander's intent. This is an art, interviewing and boring in until the game director has identified the priority needs of the sponsor. It is critically important to find out at this point who the sponsor's intended audiences are, who has stakes in the game's results, and when the sponsor needs the results in order to influence those audiences and stakeholders.

- "Why don't you have it?" The game director here searches out the reasons why this problem has not already been solved. Finding the root causes will draw out invaluable information about hidden agenda items, political and institutional pressures and imperatives, and previous attempts and why they failed, etc.

- "When are you rotating out of here?" The director also asks, "When is your action officer for this game rotating out?" The answer makes clear to the director and sponsor (or action officer) how much time is available for the game and for its analysis, report, and socialization, which in turn bounds the scale of the project and the level of effort devoted to it.

The game director must ask these four questions in the order given and in the presence of the sponsor's action officer. The very act of answering the first three makes the sponsor think through the objectives, the reasons for them, and the barriers to achieving them. Articulating all this, in turn, has three major effects. First, the sponsor and the game director now understand the problem better; second, both have better understandings of how important, or not, the game is to the sponsor and the sponsor's organization; and third, the sponsor's action officer (and through that officer, the rest of the staff) now understand the objective and mission.

Question 2, "Why do you want it?," is critical in that the sponsor's answers bound the problem and reduce the risk of "mission creep." During the initial interview the game director follows up each of the sponsor's answers to "Why

FIGURE 1
PART OF A "WHY DO YOU WANT IT?" DRILL-DOWN DIAGRAM FROM A SEA-BASING WAR GAME

Research, Analyze, and Game Requirements and Trade-offs of a Joint Sea Base to Support an Opposed Projection of a Brigade-Sized Force from Strategic Distances

Sea base will reduce dependence on land bases

Using land bases generates high international political costs

Sea base will speed flow of forces ashore

Force protection and InfoSec of a sea base are easier than for a land base

Sea base increases area held at threat

Land-base nations may deny or delay deployment

Easier to disperse a sea base than a land base

Fast projection of large ground forces

Longer deployment times give the enemy more opportunity to put in place antiaccess strategies

Want to keep options for force projection as flexible as possible

Sea base must move in close to land to debark ground forces

Enemy may have credible antiaccess forces

Heavy airlift from a sea base is difficult

Increase the fires and logistics rate

Sea base will enhance ability to project force

do you want it?"—the sponsor is likely to give more than one answer—with such follow-up questions as "Why is that important to you, or to your stakeholders, or to [whoever else has surfaced]?" "What is it that is important about that?" This initial interview with the sponsor should last about sixty minutes. Knowing when one is done is an art. After about an hour the sponsor will have provided enough information to write up (for the sponsor) and diagram (for the game director's own use) the commander's intent for the game. The director then drafts a one- to three-page information paper for the sponsor to review and sign or to correct. If there are many corrections, there may need to be a follow-up interview.

When the sponsor and the game director have an agreed objectives document, it is useful to diagram it for design purposes (see figure 1, taken from an actual sea-basing war game). The diagram imitates the structure of the interview, although the interview usually jumps around more than the diagram would imply. The top node in the diagram is the answer to the question "What do you want?" Each successively lower node is an answer to the "So what?" question about the

linked claim pointing to it. For example, in answer to the question "Why is it important that force protection and information security for a sea base are easier than for a land base?," the sponsor of this game said, "Because it is easier to disperse a sea base than a land base." Asked why that in turn was important, he said, "Because I want to keep options for force projection as flexible as possible"—and so on. Note that the graphic result is likely to be a lattice rather than a tree. The paper should use not "PowerPoint Pentagonese" or cartoons but complete English sentences—nouns, adjectives, and verbs. In the diagram each phrase must make sense if prefaced with "This is important for our objectives because . . . ." For the game's designer, the nouns provide guidance as to what actors the game must represent (either by live players or simulation), the verbs as to what actions the actors are to carry out in the game, and the adjectives as to the characteristics of the actors and of their actions. Traditional "PowerPoint Pentagonese" and cartoons hide meaning and do not provide enough specificity or breadth to support effective game design.

The game director is now in a position either to design a game, to advise that something other than a game is needed, or to suggest that other approaches must be used as well to illuminate the problem. If a game is in fact to be played, the director is now equipped to think about the resources required—time, people, technology. The game director also has the information needed to keep the chain of command informed as the design proceeds, to keep the sponsor's action officer and staff from driving the design, to recruit senior players to lead the game cells, and to set up safeguards against inappropriate interference from well-meaning

FIGURE 2
SUMMARY OF RISKS BROUGHT TO THE WAR GAME BY INEXPERT SENIORS

Game Director's Chain of Command	Senior Players in the Game	Sponsors and Their Chains of Command
Successful senior people tend to be overconfident in their ability to handle novel situations that include chance. They often believe they already know the answers.		
No longer expert in research, development, or delivery of war games, owing to time spent leading and not doing.	Expert in topics being gamed but usually never was an expert in war-game design or analysis.	Responsible for obtaining answers to questions about topics being gamed, but usually never was an expert in war-game design or production. Might not even be expert in the topic.
An attempt to influence game design risks being an attempt to provide the sponsor with an answer the sponsor likes.	An attempt to influence game design risks being an attempt to advocate for a preconceived answer.	An attempt to influence game design risks being an attempt to advocate for a preconceived answer.
Objectives analysis with the sponsor aligns all three stakeholders onto the sponsor's objectives and preempts inappropriate attempts to influence the game design, thus protecting the stakeholders from charges of conflict of interest.		

senior people. Nevertheless, and however well prepared and informed they may be, it is critical that directors be expert and professional in all aspects of game delivery and, above all, have the moral courage to do what is right for the sponsor and the support of their own command when they do so.

NOTES

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1. Garry Wills, *Certain Trumpets: The Nature of Leadership* (New York: Simon & Schuster, 1994), chap. 10.

2. Note that most people mentally add to the phrases "most people tend to" and "it is extremely difficult for" the qualification ". . . everyone else, but not me." This tendency includes senior people in the game director's chain of command, the senior players, and the sponsor.

3. See, for example, Ellen J. Langer, "The Illusion of Control," *Journal of Personality and Social Psychology* 32, no. 2 (August 1975), pp. 311–28; Dominic D. P. Johnson, Richard W. Wrangham, and Stephen Peter Rosen, "Is Military Incompetence Adaptive? An Empirical Test with Risk-Taking Behaviour in Modern Warfare," *Evolution and Human Behavior* 23 (2002), pp. 245–64; Eliot Cohen and John Gooch, *Military Misfortunes: The Anatomy of Failure in War* (New York: Free Press, 1990); and Malcolm Gladwell, "Cocksure: Banks, Battles, and the Psychology of Overconfidence," *New Yorker,* 27 July 2009.

4. David Goodstein, *On Fact and Fraud: Cautionary Tales from the Front Lines of Science* (Princeton, N.J.: Princeton Univ. Press, 2010). Goodstein is vice provost of the California Institute of Technology. See also Michael Shermer, "When Scientists Sin," *Scientific American* 303, no. 1 (July 2010), p. 34, available at www.scientificamerican.com/.

5. How many times have you heard a staff arguing about what the boss meant instead of just going back in and asking?

6. These are in fact standard project-management questions, with close parallels to military planning. Failure to ask these is a mark of incompetent project management.

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THE IDEA OF A "FLEET IN BEING" IN HISTORICAL PERSPECTIVE

John B. Hattendorf

The phrase "fleet in being" is one of those troublesome terms that naval historians and strategists have tended to use in a range of different meanings. The term first appeared in reference to the naval battle off Beachy Head in 1690, during the Nine Years' War, as part of an excuse that Admiral Arthur Herbert, first Earl of Torrington, used to explain his reluctance to engage the French fleet in that battle. A later commentator pointed out that the thinking of several British naval officers ninety years later during the War for American Independence, when the Royal Navy was in a similar situation of inferior strength, contributed an expansion to the fleet-in-being concept. To examine this subject carefully, it is necessary to look at two separate areas: first, the development of the idea of the fleet in being in naval strategic thought, and, second, the ideas that arose in the Royal Navy during the War of the American Revolution.

THE CONCEPT IN HISTORY

As a strategic concept, "fleet in being" became a point of discussion among naval strategists in 1891, with the publication of Vice Admiral Philip Colomb's book *Naval Warfare*.[1] In this work Colomb pointed to the origins of the phrase with Admiral Lord Torrington in his speech before Parliament explaining the rationale for his actions in the battle of Beachy Head (Cap Béveziers). In that action, the comte de Tourville, with seventy-five French ships of the line, had defeated the fifty-six ships of the Anglo-Dutch fleet under Torrington's overall command on 30 June/10 July 1690.[2] When Torrington was called before Parliament to explain his defeat, he reputedly declared, "As it was, most Men were in fear that the French wou'd invade; but I was always of another Opinion, which several

members of this Honorable House can witness: for I always said, that whilst we had a Fleet in being, they would not dare to make an Attempt."[3]

There is some question about the authenticity of the phrase "fleet in being" in that quotation, as it does not appear in the contemporary manuscript records of Torrington's speech;[4] it is known only from an anonymously prepared pamphlet that purports to be the speech, published twenty years after the event, in 1710.[5] In a preface to the reader, the publisher of the 1710 pamphlet explained, "The following speech falling into my hands by Accident, and being pleas'd with the History it relates; I thought it might give the World a great deal of Satisfaction if it were made publick."[6] Those words might well impress a skeptical historian as the tone of invention, but be that as it may. Whether or not Torrington actually used the phrase in 1690, it is one that has certainly taken on a life of its own during the three hundred years that have followed.

Among naval strategists, Philip Colomb was the first in the Anglophone world to draw attention to the idea as a broad strategic principle, and his thinking developed into an exchange of differing opinions between such well-known writers as Alfred Thayer Mahan and Sir Julian Corbett. Later writers, such as Herbert Richmond, Raoul Castex, Herbert Rosinski, and Geoffrey Till, have commented on their exchange and added their own thoughts in the process.

Colomb himself, in light of the controversy that he had raised in 1891, tried to clarify his thinking in a revised third edition of his work, eight years later: "Lord Torrington, in his definition of the principle, went no farther than to assert that while he observed the enemy's fleet with one certainly inferior, but yet not so inferior as to be debarred from offering battle on any advantageous circumstances appearing, it would be paralysed."[7] While this convoluted wording took into account some of the criticism that had been made of Colomb's initial understanding of the battle, he believed that the general principle should go farther: "'A fleet in being,' even though it was discredited, inferior, and shut up behind sand banks, was such a power in observation as to paralyze the action of an apparently victorious fleet either against 'sea or shore.'"[8] Stating the concept again elsewhere in the same work, Colomb wrote, "A 'fleet in being' has come into general use to denote what, in naval affairs, corresponds to 'a relieving army' in military affairs. That is to say, a fleet which is able and willing to attack an enemy proposing a descent upon territory which that force has it in charge to protect."[9]

Captain Mahan's biography of Admiral Lord Nelson included a telling criticism of Colomb's concept of the idea of a fleet in being. Writing about Nelson's 1794 landing at Calvi in Corsica, Mahan declared that Nelson's actions in that operation showed the weakness of the fleet-in-being concept. If Nelson had been in Tourville's place, Mahan wrote, Tourville would not have thought the opposing

English force, as a fleet in being, would be any kind of a deterrent to making a landing.[10]

Colomb responded by saying that Mahan misunderstood the fleet-in-being concept. He argued that Mahan himself, through his service as a member of the U.S. War Board during the Spanish-American War of 1898, had become associated with one of the most extreme examples in history of the potential effectiveness of a fleet in being when U.S. forces had been deterred for a time from capturing Santiago de Cuba by the Spanish navy's fleet in being, a squadron under Admiral Pascual Cervera.[11] Mahan, however, would have none of it. Using an example from the Peloponnesian War, Mahan pointed out that during the Athenian expedition to Syracuse, the Syracusans moved their inferior fleet to Tarentum. "The momentary safety of Syracuse would illustrate the influence of a 'fleet in being'; its subjugation after the fall of Tarentum would show the limitations of such a fleet, which, by definition, is inferior."[12] Mahan felt that "the exaggerated argument about the 'fleet in being' and its deterrent effect is, in effect, assuming that war can and will be made only without risk."[13] That is, "it was not the beaten and crippled English and Dutch 'fleet in being' that prevented an invasion of England. It was the weakness or inertness of Tourville, or the unreadiness of the French transports."[14] Underscoring a related general point, Mahan noted that when a fleet is tied to defending a position ashore that is otherwise inadequately protected by fortification or by an army, it is unable to concentrate or move freely and forcefully against an enemy.[15]

Sir Julian Corbett took a different stance when he pointed out that a fleet in being is a legitimate method of disputing command of the sea by assuming a defensive attitude. He argued that historical misunderstanding about the circumstances that had given rise to the phrase and the subsequent limitation of the concept to deterrence against an amphibious landing obscured the full significance of the strategic concept. "For a maritime Power, then," Corbett wrote, "a naval defensive means nothing but keeping the fleet actively in being—not merely in existence, but in active vigorous life."[16] In Corbett's interpretation, Torrington's intention was to act on the defensive and to prevent the enemy from achieving any result until such time as Torrington could consolidate his scattered forces so as to have a fair chance of winning a fleet engagement with Tourville's fleet. "The doctrine of the 'Fleet in being,' as formulated and practiced by Torrington," Corbett explained, "goes no further than this, that where the enemy regards the general command of a sea necessary to his offensive purposes, you may be able to prevent his gaining such command by using your fleet defensively, refusing what Nelson called a general battle, and seizing every opportunity for a counterstrike."[17] Corbett concluded that those who criticized Torrington at the time—as

well as those who had since used the historical example for developing a strategic principle—did not understand that the meaning of a fleet in being was at sea and in contact with an enemy.

Later commentators have continued this discussion but have achieved little resolution of the conceptual problems involved. Admiral Raoul Castex favored Mahan's argument over Corbett's.[18] Castex thought Colomb's argument exaggerated and Corbett an inexperienced civilian, harshly judging him as "an armchair strategist ignorant of the reality of war."[19] In contrast, Admiral Sir Herbert Richmond followed Corbett's view and added his own thoughts. "What Torrington meant is plain," Richmond wrote. "So long as he had an active fleet, prepared to seize any opportunity of slipping past the French and joining the score of [English] ships to the west, Tourville, despite his superior numbers, could not commit himself to a major operation."[20] An inferior fleet, Richmond pointed out, could not prevent a raid and could not be an absolute or complete safeguard, only a temporary one. However, in a situation where a superior enemy fleet needed to obtain a rapid and decisive victory, to disable completely an inferior fleet to carry out an invasion or some other larger objective, the inferior fleet can have a temporary deterrent effect. It does this by avoiding action until such time as conditions might be more favorable, as the English eventually did in that war two years after Beachy Head, in 1692, as well as afterward.[21]

In the next generation of naval strategic thinkers, the German American Herbert Rosinski started in the 1930s a comparative study of maritime strategic thinkers, of which he completed only the section devoted to Mahan.[22] In this work, Rosinski noted that Mahan agreed completely with Corbett that "'dispute of command,' if attempted at all, can only be achieved by the greatest display of activity and offensive spirit conceivable."[23] Rosinski went on to exclaim, "It is therefore more than astonishing to find [Mahan] throughout all his writings violently opposed to the concept of a 'fleet in being,' which when rightly understood, stands precisely for such a watchful and aggressive 'hanging on the enemy's flanks.'"[24] Looking carefully at Mahan's reasoning, Rosinski concluded that Mahan had taken Torrington to mean a passive retreat to safety—the very opposite of what Torrington had actually intended, an aggressive defense. One might add that Mahan's understanding was similar to that which the king, queen, and council expressed in 1690 and that led to Torrington's dismissal, imprisonment in the Tower, and trial.[25]

While naval historians and strategists have tended to study the concept as an abstract strategic idea, historians of the reign of King William III and the aftermath of the Revolution of 1688 are aware that there may have been other reasons why Admiral Herbert (that is, Torrington) did not fight the French, as he had

been ordered to do. As the historian Stephen B. Baxter summarized the range of possibilities, "He [Torrington] may have resented the orders of the cabinet council. He may have been involved in the political squabbles that were almost destroying the fighting capacity of the English navy. He may have been jealous of the Dutch. He may have played the coward or the traitor."[26] After all, there was a parallel in very recent memory, the failure of the English fleet under Lord Dartmouth to oppose William III's invasion of England in 1688.

To complicate the issue further, the concept of fleet in being has come to be used very loosely, for a range of related naval options. Understanding the term as employed in twentieth- and twenty-first-century naval discussion, Geoffrey Till has identified within the concept four different types of operations, ranging from moderated offense to passive defense:[27]

1. Obtaining a degree of command of the sea by temporarily avoiding a decision in battle.

2. Achieving positive strategic benefit by carrying out missions, such as attack on trade, while avoiding a decisive engagement with a superior enemy.

3. Using continuous harassment and evasion of the enemy as a means of denying a superior enemy the unfettered use of the sea.

4. Using actions designed merely to ensure the survival of a weaker opposing fleet.

The historian Jerker Widén has recently commented that these four variants constitute collectively a potential problem for the proper interpretation of the fleet-in-being concept. He argues that the fourth—actions merely to ensure a fleet's survival—is not a legitimate form of fleet in being, which requires maintaining an active and credible threat against a superior enemy. The second and third are similar to one another, but they incorporate Corbett's alternative method of disputing command of the sea—minor counterattacks. For theoretical purposes, Widén recommends keeping conceptually separate the ideas of disputed command and minor counterattack. The fleet in being, he writes, is a defensive deterrent strategy by a weaker naval power, while minor counterattacks constitute a limited form of offensive action within a defensive strategy. However, in practice, Widén notes, these two tend to coincide as separate elements of a single strategy.[28]

THE NAVAL WAR OF THE AMERICAN REVOLUTION

It was the famous British naval historian and strategist Sir Julian Corbett who pointed out, in *Some Principles of Maritime Strategy,* that the War of the American Revolution provided further evidence about the meaning and application of the concept of the fleet in being.[29]

In the first three years of the war, between 1775 and 1777, Britain used its military and naval resources to try to end the rebellion in North America quickly, but those attempts failed. In this period, relatively few British warships were built, but with France's entry into the war in 1778 the Royal Navy began a building program to try to recover the superiority of warship numbers and tonnage it had let slip to France. It would take the Royal Navy years to recover that position.

The year 1778 witnessed not only the entry of France into the war but the departure of a French squadron under the comte d'Estaing to North America and then to the West Indies. The government in London now changed its strategic priorities and put home defense and the protection of the colonies in the West Indies at a higher level than the issues at stake with the North American colonies. Yet there were critics of this policy within the cabinet, notably the colonial secretary, Lord George Germain, who led efforts that, from time to time, diverted the ministry from its initial intentions. As a result of this and other factors, 1778 became a year of missed naval opportunities for both Britain and France, as each in its turn looked across the Atlantic.

The French navy had the opportunity in 1778 to achieve something close to parity in naval strength with the Royal Navy, even local superiority in European waters, by uniting the Brest and Toulon squadrons for a decisive battle. Instead, d'Estaing took the Toulon squadron to North America. At the same time, London, instead of using its strength to seek a decisive action with the French navy, dispatched Vice Admiral John Byron and twenty ships to chase d'Estaing across the Atlantic. In the following year and a half neither of those fleets had any strategic effect in North American waters or even in the West Indies, where the naval battles they fought were indecisive. Meanwhile, in European waters, in the first major naval battle of the war, a French fleet under the comte d'Orvilliers clashed, also indecisively, with a comparably sized British fleet in the first battle of Ushant on 27 July 1778.[30]

During the following autumn and winter the Royal Navy and Britain generally became further distracted by an argument that arose between two of the commanders at Ushant over their actions in that engagement: Vice Admiral Sir Hugh Palliser and his superior, Admiral the Honorable Augustus Keppel. This personal and professional dispute resulted in courts-martial for them both; in Parliament, vicious disputes between the supporters of the respective admirals created a political opposition to the government.

In the wake of all this, in the spring of 1779 the Royal Navy needed to prepare for a new campaign by finding a senior and experienced commander for the Channel Fleet, a fighting admiral who was a supporter of the government. Among the possible choices, there seemed to be no one who could meet all the necessary criteria. In the end, the selection fell on Admiral Sir Charles Hardy, a

very senior admiral who was above the political fray but had not been to sea in years. Although Hardy had a reputation as a good-natured man, the divisive atmosphere of the day led some officers to refuse to serve under him. To back him up the Admiralty turned to some untried officers who seemed to have potential. Two captains in this group were promoted to rear admiral and given subordinate commands in the Channel Fleet. Another, Captain Richard Kempenfelt, recognized within the navy as a thoughtful reformer and tactical innovator, was given the post of Hardy's captain of the fleet, a position that might be considered a precursor to a modern admiral's chief of staff.[31]

As the Channel Fleet prepared to put to sea in the spring of 1779, it was hampered by a shortage of seamen, a shortage largely caused by the impressment of men carrying infectious diseases.[32] At the same time, the strategic situation at sea was only gradually becoming clear to British leaders. In February, intelligence arrived in London that Spain was beginning military preparations in the vicinity of Gibraltar. In March, London learned that Spain was fitting out warships at El Ferrol, and France reportedly was preparing thirty-three at Brest. At first British observers did not understand the full significance of these reports. It took them some time to conclude that Spain was changing from a neutral mediator between Britain and France to an active supporter of France against Britain. It took even longer to understand that this Franco-Spanish alliance was tied strategically to the Spanish siege of Gibraltar and to a design to occupy part of England by amphibious assault to force Britain to release Gibraltar to Spain in future peace negotiations.[33] Thus, the entry of Spain into the war altered the strategic situation for Britain.[34]

By July 1779 British officials were aware that a superior Franco-Spanish naval force was heading toward the Channel, but things were left in strategic suspense until it actually appeared off the British Isles. Meanwhile, senior British officers expressed a variety of opinions on the impending situation. Some thought the enemy force would prove too unwieldy and ineffective to be a real threat in battle. In fact, the sixty-three-ship Franco-Spanish fleet would not actually be sighted entering the Channel until mid-August, by which time thirty thousand troops would be waiting in France to invade England. In the interim, Captain Kempenfelt was at sea with Admiral Hardy on board Hardy's flagship, HMS *Victory,* with some of the thirty-nine ships of the line of the Channel Fleet. On 27 July 1779 Kempenfelt wrote to his friend Captain Charles Middleton, the comptroller of the navy, reflecting on the strategic situation that he, as Hardy's fleet captain, faced:

> Much, I must say almost all, depends on this [i.e., the Channel] fleet; 'tis an inferior against a superior fleet; therefore the greatest skill and address is requisite to counteract the designs of the enemy, to watch and seize the favourable opportunity for action, and to catch the advantage of making the effort at some or other feeble part

of the enemy's line; or if such opportunities don't offer, to hover near the enemy, keep him at bay, and prevent his attempting to execute anything but at risk and hazard; to command their attention, and oblige them to think of nothing but being on their guard against your attack.[35]

In the event, actions such as these, combined with the collapse of supplies and of the health of seamen in the Franco-Spanish fleet, as well as the random effects of chance, eventually prevented the Franco-Spanish fleet from achieving success.[36]

The war for America continued without major strategic gains on either side, with roughly equally matched fleets opposing one another, until 1781. In that year Britain was successful in slowing the flow of naval stores—including timber, pitch, iron, and copper—to the Spanish and French navies, thus raising their costs; otherwise the British blockade had little effect on the enemy. However, it did create a new naval enemy in European waters, the Dutch Republic, by interfering with Dutch trade to France. As a result, a British squadron fought the Dutch fleet off Dogger Bank. Celebrated (although in fact tactically indecisive) as a victory by both sides, Dogger Bank became a British strategic victory when the Dutch fleet failed to venture out again during the remainder of the war.[37] In 1781, the combined Franco-Spanish fleet returned to the Channel, again in strength too great for the Royal Navy's Channel Fleet to dare challenge.

Meanwhile, in September 1781, the strategic crisis of the war occurred when the comte de Grasse was able to seize and maintain local command of the sea off Virginia to control the waters around the Chesapeake Capes and in Chesapeake Bay for several weeks, preventing relief from reaching British forces ashore at Yorktown. General Lord Cornwallis's surrender eventually brought down the ministry in London and replaced it with a government that was pledged to ending the war. Yet it would be some time before all that happened.

In this situation, Lord Sandwich at the Admiralty and his professional advisers, who included Captain Charles Middleton, Captain Lord Mulgrave, and Richard Kempenfelt (promoted to rear admiral in 1780 and now in command of the Western Squadron of the Channel Fleet), proposed a dramatic new strategy. At this point, Britain's warship-building program, begun after the war started, was beginning to alter the strategic balance of forces between the combined French and Spanish fleets and Britain's. The numerical superiority of the Bourbon naval powers in capital ships in comparison to Britain's grew from 25 percent in 1775 to a high point in 1780 of 44 percent. From 1780 to 1785 it declined to a low of a 17 percent superiority.[38] The percentages in numerical superiority, however, do not reflect differences in fleet readiness. As the French navy increased in size, it experienced increasing difficulties in manning and funding.[39] Nevertheless, in the context of this overall situation, the Royal Navy's Channel Fleet remained

considerably weaker than that in the West Indies. The cabinet in London had made a deliberate strategic choice to attempt a victory in the West Indies rather than in European waters. Its rationale might be justified by Admiral Sir George Rodney's victory on 12 April 1782 over de Grasse at the Saintes, preventing the loss of Jamaica. Yet Rodney's victory was not the kind of stunning strategic victory that could end a war, despite its considerable moral effect. The high-risk strategy that brought it about left more serious vulnerabilities exposed at home.[40]

While the ministry placed priority on the West Indies and reduced naval strength in the eastern Atlantic and North Sea to do so, the Royal Navy at home still had essential duties to carry out as an inferior fleet in being, unable to conduct a major fleet battle. Most importantly, the government's decision meant that the Royal Navy could not maintain control of the Western Approaches to the Channel with a sufficient number of its largest warships. Such a force at that important naval strategic position at sea had traditionally served the multiple purposes of protecting British trade, attacking enemy trade, preventing invasion, and deterring French forces from leaving Brest for overseas missions.[41] At the same time, the war with the Dutch required a blockade of the Dutch coast to prevent the Dutch navy from returning to sea. Meanwhile, British warships in the North Sea served to blockade the eastern approaches of the Channel and to intercept merchant ships carrying contraband naval stores to France. In addition, the war with Spain called for a blockade of Spanish ports, as well as the convoying of supplies for the relief of Gibraltar during the Spanish siege. All of this needed to be done while avoiding a major, decisive fleet battle. The Royal Navy met this conundrum on an operational level by shuttling ships back and forth between the North Sea and the Channel as the situation required and by maintaining superior ship-to-ship fighting capabilities.[42]

As for the broad, strategic level, however, Rear Admiral Kempenfelt explained his views of the theoretical aspects of the situation in early January 1782, after receiving Admiralty orders for his Western Squadron. In comparison with Torrington's single-sentence statement, Kempenfelt's thoughts, as Sir Julian Corbett considered, represented the "developed idea of the 'fleet in being'" that showed how the concept had matured in British naval thinking some ninety years after Torrington:[43]

> When the enemy's force by sea [are][a] superior to yours and you have many remote possessions to guard, it renders it difficult to determine [what may be][b] the best manner of disposing of your ships.

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a. The 13 January version replaces "is" with "are."

b. The 13 January version adds "what may be."

[When the enemy's designs are known],[c] in order to do something effectual, you must endeavour to be superior to them in [such parts][d] where, [if they should succeed in their design],[e] they would most injure you.

If your fleet is so divided as to be in all places inferior to the enemy, they will then in all places have [the probability][f] of succeeding in their attempts.

[If a squadron of sufficient force cannot be formed to face the enemy at home, it would be more eligible to let the number of that squadron be yet less, that thereby you may be enabled to gain a superiority elsewhere].[g]

When inferior to the enemy, and you have only a squadron of observation to watch and attend upon their motions, such squadron should be composed of two-decked ships only,[44] as [to answer its purpose][h] it must have the advantage [in sailing of the enemy, otherwise in certain circumstances they may be forced to action or to give up some of their heavy sailers.][i]

It is highly [expedient][j] to have such a flying squadron to hang [about][k] the enemy's large fleet, as it will prevent their dividing into [squadrons][l] for intercepting your trade [or other purposes],[m] or spreading [and extending][n] their ships for a more

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c. The 13 January version replaces "When you know the enemy's designs" with the words between brackets.

d. The 13 January version replaces "some part" with the words between brackets.

e. The 13 January version replaces "if they succeeded" with the words between brackets.

f. The 13 January version replaces "a fair chance" with the words between brackets.

g. The 13 January version creates a new paragraph here and replaces "If a squadron cannot be formed of sufficient force to face the enemy's at home, it would be more advantageous to let your inferiority be still greater, in order by it to gain the superiority elsewhere" with the words between brackets.

h. The 13 January version replaces "as to ensure its purpose" with the words between brackets and eliminates the period after "purpose."

i. The 13 January version replaces "of the enemy in sailing; else, under certain circumstances it will be liable to be forced to battle" with the words between brackets. "Heavy sailers" refers to slow, cumbersome, unweatherly ships, rather than simply large ones.

j. The 13 January version starts a new paragraph with this sentence and replaces "necessary" with "expedient."

k. The 13 January version replaces "on" with "about."

l. The 13 January version omits the word "separate" before "squadrons."

m. The 13 January version adds the words between brackets.

n. The 13 January version adds the words between brackets.

extensive view. [Such a squadron will be always at hand ready][o] to profit from any accidental separation or dispersion of their [ships][p] from hard gales, fogs or other causes. [They][q] may intercept supplies, intelligence, etc. to them. In fine, such a squadron will be a check and restraint upon their [activity],[r] and thereby prevent [much][s] of that mischief they otherwise might do.

When the enemy are near the Channel, I should suppose the best situation for such a squadron would be to keep without them to the westward[, as more favourable to protect your ships coming into the Channel. The squadron will also be more at liberty for its operations to approach or keep distance from the enemy as they may find convenient, and not liable to be forced into port and blocked up].[t]

When the enemy [perceive][u] your design of keeping the North Sea free by a stout squadron for your trade to return home that way, it may be supposed they will detach from [their][v] Grand fleet as many ships as the inferiority of your Western squadron will allow to endeavour, in conjunction with the Dutch, to turn in that sea, the balance of power on their side.[45] [But probably they will penetrate into this scheme of ours time enough to prevent its good effects this ensuing summer, and other projects they may have in view to attempt with their Grand fleet may divert their attention from it.][w]

The enemy I conceive [have][x] at this time two grand designs against us: the one, the conquest of our West India Islands; the other, at home, not confined merely to the interception of our trade, but to favour by [the superiority of their fleet][y] a formidable

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o. The 13 January version replaces "You will be at hand" with the words between brackets.

p. The 13 January version replaces "fleet" with "ships."

q. The 13 January version replaces "You" with "They."

r. The 13 January version replaces "motions" with "activity."

s. The 13 January version replaces "a good deal" with "much."

t. The 13 January version adds the section between brackets, ending the paragraph with the additional words.

u. The 13 January version replaces "perceives" with "perceive."

v. The 13 January version replaces "the" with "their."

w. The 13 January version adds the sentence between brackets.

x. The 13 January version adds the word "have."

y. The 13 January version replaces "their superiority" with the words between brackets.

descent upon Great Britain;^z and I [would]^{aa} suppose the blow would be directed where it would be most felt by us, either against the Metropolis or Portsmouth. I should rather think the latter, as [more practicable]^{bb} from the nature of the navigation.

They will with some reason conclude that [one]^{cc} of those designs will succeed; [knowing]^{dd} that we cannot, by our naval power, guard against both, and that if we employ a force sufficient to defeat their design in one place, we must necessarily leave the other exposed to them.

[It may be (or might have been) in our power to send such a force of ships to the West Indies as would frustrate their designs there, but at home I imagine, with our outmost exertions, we must remain inferior by sea and trust our defence from a descent to our land forces.

As our ships are now all coppered, they are always ready for service; therefore, when the enemy's fleet at the end of the campaign returns into port, which hitherto has been always early in the fall, you are then at liberty to send what number of ships you might think proper to act offensively or defensively in the West Indies during the winter months, and have them again at home in sufficient time for summer service.

There is great advantage upon such occasions in letting ships slip out singly, as their voyage is thereby rendered much shorter, and your design a secret.]^{ee}

On the first of the two drafts of Kempenfelt's document, Sir Charles Middleton had written a short note that clarified the reasoning and was later incorporated in the final version sent to Lord Sandwich: "As something must [be] left exposed, it appears to me that Great Britain and Ireland are now more capable of defending themselves than our colonies; and that the present year will probably pass over before they discover our design in the North Sea. It behooves us thus to make the best of the time allowed us."[46]

To Sir Julian Corbett's way of thinking, Kempenfelt had already demonstrated, practically and "in the most positive and convincing manner," the positive side of the fleet-in-being theory a few weeks before drafting his memorandum.[47] Fifty-three leagues (approximately 159 nautical miles, or 294 kilometers) southwest of the Ushant on 12 December 1781, Kempenfelt's Western Squadron had

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z. The 13 January version omits "and Ireland."

aa. The 13 January version replaces "should" with "would."

bb. The 13 January version replaces "less difficult" with "more practicable."

cc. The 13 January version replaces "one or the other" with "one."

dd. The 13 January version replaces "well knowing" with "knowing."

ee. The 13 January version adds the three final paragraphs, shown here within brackets.

encountered a French hundred-ship convoy sailing, under the escort of the comte de Guichen, from Brest with military supplies and reinforcements for the East and West Indies. Observing that de Guichen and his escorting warships were over the horizon, hull-down to leeward, Kempenfelt attempted to cut them off from the transports. Partially succeeding in this, Kempenfelt avoided a major action and took nine transports from among the hundred ships, as well as, on the following day, an additional five stragglers.

A number of critics of the action—including King George III, Rear Admiral Sir Samuel Hood, and Admiral Lord Rodney—thought that Kempenfelt should have followed the French squadron and taken more ships, even to the extent of going all the way to the West Indies to tip the naval balance there, rather than returning home. At the tactical level, Kempenfelt's skillful action in using an inferior force to embarrass the enemy and to take prizes in the presence of its escort was remarkable, but strategically it had little effect.[48] The strategic effect related to the convoy was caused by the weather on Christmas Day, five days after Kempenfelt returned to Spithead, when a violent storm forced most of the French convoy back into port and prevented the rest from reaching its intended destination.

Word of Kempenfelt's action, along with the news of the surrender of the British army at Yorktown (and the failure of the Royal Navy to relieve it), had arrived at London in late November and led to political attacks in the House of Commons on Lord North's ministry for naval mismanagement. Eleven days after Kempenfelt submitted his memorandum to Lord Sandwich, the House voted "to inquire into the causes of the lack of success of his Majesty's naval forces during this war, and more particularly in the year 1781," the first of a series of resolutions and charges that on 20 March 1782 forced Lord North's ministry from office, along with Lord Sandwich as First Lord of the Admiralty.[49] During the course of the debates, the young opposition politician Charles James Fox pointed out that the government's strategy had been the reverse of what it should have been. That is, he argued, having limited naval resources it sent major squadrons to distant stations and left home waters exposed when it should have concentrated in European waters, where it could have controlled enemy forces at their source while at the same time providing for home defense.[50]

Kempenfelt's and Middleton's thinking showed that their defensive, fleet-in-being strategy was based on a number of factors related to the specific context of the strategic situation in late 1781 and early 1782. At the tactical and operational levels, their thinking depended on a growing sense that the enemy's naval strength was becoming weaker in size and less unified in action.[51] In proposing more daring moves they were depending on this trend, as well as on easy strategic maneuverability of their own naval forces from one theater of operations to another; on subterfuge; on the enemy's limited ability to guess what they were doing

and counter it; and on the (at least marginal) technological superiority provided by copper sheathing of the underwater hulls of ships, as well as on the adoption of carronades, which would prove their value as a new form of ordnance during the battle of the Saintes.[52]

At the strategic level, the application of the concept that Kempenfelt and Middleton were advocating abdicated the Royal Navy's traditional role as Britain's first line of defense, leaving home defense to the British army and to the militia at the beaches. It also assumed that the constraining effects of wind, weather, and inefficiency on the enemy's naval force would be less for the British. At the same time, it abandoned a strategic idea that had been proved valid in the past and would later be proved again in subsequent wars—that by maintaining naval superiority in European waters the Royal Navy could eliminate or reduce (as Fox argued on the floor of the Commons) the threat to overseas possessions at the source, by preventing French and Spanish forces from sailing to distant stations.

This discussion should not lead a reader to think that the idea of the fleet in being was one that was widely understood or discussed in the Royal Navy of the eighteen and nineteenth centuries. Admiral Kempenfelt was certainly a very unusual naval officer, a man whose thinking was not widely reflected in the British naval officer corps.[53] The instances and documents mentioned here are the only known examples to have existed before Colomb opened the idea for wider discussion as a general strategic concept in 1891. In both the 1690 example and that of the War of the American Revolution, the Royal Navy's use of the fleet-in-being concept resulted in severe political repercussions for those who were held responsible. In 1690, the commanding admiral was blamed, in 1782 the government. To the extent that the Royal Navy employed a fleet in being, it was not a war-winning strategy but a delaying gambit, or a device to protract the war at sea so as to achieve other objectives. At Beachy Head, its apparent success for the English navy was due largely to the inefficiency of the enemy and other factors within the larger context of that war. During the War of the American Revolution, however, a strategy of fleet in being in home waters had a role in allowing the Royal Navy to strengthen Rodney's fleet in the West Indies to the point that he could win the battle of the Saintes on 9–12 April 1782.

The ideas on a fleet in being that Richard Kempenfelt and Charles Middleton discussed during the final phase of the War of the American Revolution certainly represented an elaboration of an idea that had been only hinted at in Admiral Lord Torrington's single sentence. Their elaborated concept is more than an expansion on the original idea, and it expresses a much more precise meaning than Philip Colomb and a number of other commentators have allowed. An enemy cannot, as a strategic matter, entirely ignore such a fleet, presenting as it does an active threat that requires a significant response. In the context of a strategic

situation involving naval forces dispersed in several geographic areas, an active and aggressive fleet in being can potentially serve as a temporary deterrent in one area, if for a very limited time, simultaneously maintaining morale and operational skills within that fleet and gaining time to concentrate forces in another area where a larger threat exists. The historical experiences that have been discussed here suggest, however, that it is a high-risk strategy to deal with particular circumstances, to be considered only when resources are strained and threats dispersed in different geographical areas, not to be expanded into the rationale for a general strategic naval posture.

NOTES

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1. Vice Admiral P. H. Colomb, *Naval Warfare: Its Ruling Principles and Practices Historically Treated* (London: W. H. Allen, 1891). References in this article are from the reprint of the 1899 third edition, with an introduction by Barry M. Gough, Classics of Sea Power, 2 vols. (Annapolis, Md.: Naval Institute Press, 1989). On the concept of fleet in being, see vol. 1, pp. 5–9, 154, 170; and vol. 2, pp. 502, 550, 556–60.

2. For nearly a century, the standard account of the battle in English was William Laird Clowes, *The Royal Navy: A History from the Earliest Times to 1900* (London: Sampson Low, Marston, 1893), vol. 2, pp. 333–41. For recent scholarly accounts of this battle, see E. Taillemite et P. Guillaume, *Tourville et Béveziers* (Paris: Economica, 1991); Daniel Dessert, *Tourville* (Paris: Fayard, 2002), pp. 233–40; and N. A. M. Rodger, *The Command of the Ocean: A Naval History of Britain, 1648–1815* (London: Allen Lane, 2004), pp. 145–46, 159.

3. *The Earl of Torrington's speech to the House of Commons, in November, 1690.: Occasion'd by the ingagement at sea on the 30th of June that year, between the confederate and French fleets. To which is prefix'd, a draught of the line of battel, curiously engraven on copper* (London: n.p., 1710) [hereafter *Earl of Torrington's speech*], p. 29.

4. Printed in J. B. Hattendorf et al., eds., *British Naval Documents, 1204–1960,* Publications of the Navy Records Society (Aldershot, U.K.: Ashgate, 1993), vol. 131, document 131: The Battle of Beachy Head, 1690, pp. 223–25, manuscript SOU/2, pp. 27–29, Phillips-Southwell Papers, National Maritime Museum (NMM), Greenwich, United Kingdom.

5. *Earl of Torrington's speech.* John Ehrman believes that the fact that similar concepts and wording of some of the statements in the pamphlet are also found in the manuscript summaries gives credibility to the thought that the pamphlet might be the full text of the speech that Torrington presented; *The Navy in the War of William III, 1689–1697* (Cambridge, U.K.: Cambridge Univ. Press, 1953) [hereafter *Navy of William III*], pp. 323–24 note 6. The contemporary manuscript report on Torrington's speech that Ehrman cited in 1953—as Bibl. Phill, Admiralty Papers, vol. iv, ff. 101–108, NMM—is the same document as that cited in note 4 above. When the Phillips Library manuscripts at Greenwich

were later divided into separate groups, this one was given a new archival designation: SOU/2, Phillips-Southwell collection, NMM. On Torrington's court-martial, see also Peter LeFevre, "The Earl of Torrington's Court-Martial, December 1690," *Mariner's Mirror* 76 (August 1990), pp. 243–49.

6. *Earl of Torrington's speech,* p. 3.

7. Colomb, *Naval Warfare,* vol. 2, p. 550.

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13. Hattendorf, ed., *Mahan on Naval Strategy,* p. 209.

14. Ibid., p. 247, from Mahan, *Naval Strategy*, chap. 10.

15. Hattendorf, ed., *Mahan on Naval Strategy,* p. 263.

16. Julian S. Corbett, *Some Principles of Maritime Strategy,* ed. Eric J. Grove, Classics of Sea Power (Annapolis, Md.: Naval Institute Press, 1989), p. 212.

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20. Sir Herbert Richmond, *The Navy as an Instrument of Policy, 1558–1727* (Cambridge, U.K.: Cambridge Univ. Press, 1953), p. 215.

21. Ibid., p. 216.

22. Herbert Rosinski, *Commentaire de Mahan,* preface by Hervé Coutau-Bégarie (Paris: Economica, 1996). Originally written in English in about 1938, it has been published only in French. The original typescript document is in Manuscript Collection 91: Herbert Rosinski Papers, box 7, folder 3: "Mahan, 1938," Naval Historical Collection, Naval War College, Newport, R.I.

23. Rosinski, *Commentaire de Mahan,* pp. 71–72 (English typescript pp. 33–34).

24. Ibid. See A. T. Mahan, *Lessons of the War with Spain* (Boston: Little, Brown, 1899), pp. 78, 123–24; Mahan, *Life of Nelson,* vol. 1, pp. 136–37; and Mahan, *Naval Administration and Warfare* (Boston: Little, Brown, 1908), p. 149.

25. Ehrman, *Navy of William III,* pp. 349–52; *Oxford Dictionary of National Biography,* s.v. "Herbert, Arthur, Earl of Torrington (1648–1716)," by John B. Hattendorf (Oxford, U.K.: Oxford Univ. Press, 2004), available at dx.doi.org/10.1093/ref:odnb/13017 (January 2008).

26. Stephen B. Baxter, *William III and the Defense of European Liberty, 1650–1702* (New York: Harcourt, Brace, 1966), p. 267.

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28. Widén, *Theorist of Maritime Strategy*, pp. 132–33.

29. Corbett, *Some Principles of Maritime Strategy,* p. 222.

30. N. A. M. Rodger and Daniel A. Baugh, "The War for America, 1775–1783," in *Maritime History,* vol. 2, *The Eighteenth Century and the Classic Age of Sail,* ed. John B. Hattendorf (Malabar, Fla.: Krieger, 1997), pp. 205–206.

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32. Ibid., p. 66.

33. For further background see Stetson Conn, *Gibraltar in British Diplomacy in the Eighteenth Century* (New Haven, Conn.: Yale Univ. Press, 1942), chap. 8, pp. 174–98, and John Lynch, *Bourbon Spain, 1700–1808* (Oxford, U.K.: Basil Blackwell, 1989), pp. 319–22.

34. Syrett, *Royal Navy in European Waters,* p. 69.

35. Kempenfelt to Middleton, 27 July [1779], in *Letters and Papers of Charles, Lord Barham, Admiral of the Red Squadron, 1753–1813,* ed. John Knox Laughton, Publications of the Navy Records Society (London: Navy Records Society, 1907) [hereafter *Barham Letters and Papers*], general series vol. 1, vol. 32, p. 292.

36. Rodger and Baugh, "War for America, 1775–1783," p. 206.

37. Jaap R. Bruijn, *The Dutch Navy of the Seventeenth and Eighteenth Centuries* (Columbia: Univ. of South Carolina Press, 1993), p. 157; Syrett, *Royal Navy in European Waters,* pp. 131–32.

38. Jan Glete, *Navies and Nations: Warships, Navies and State Building in Europe and America, 1500–1860* (Stockholm: Almqvist & Wiksell, 1993), vol. 1, p. 276.

39. Jonathan R. Dull, *The French Navy and American Independence: A Study of Arms and Diplomacy, 1774–1787* (Princeton, N.J.: Princeton Univ. Press, 1975), pp. 143–44, 256 note 30, 278–79; Henri Legohérel, *Les Trésoriers généraux de la Marine (1517–1788)* (Paris: Editions Cujas, 1965), p. 341.

40. N. A. M. Rodger, *The Insatiable Earl: A Life of John Montague, 4th Earl of Sandwich* (London: HarperCollins, 1993), pp. 273, 292.

41. Michael Duffy, "The Establishment of the Western Squadron as the Linchpin of British Naval Strategy," in *Parameters of British Naval Power, 1650–1850,* Exeter Maritime Studies, no. 7 (Exeter, U.K.: Exeter Univ. Press, 1992), pp. 75–76; A. N. Ryan, "The Blockade of Brest, 1689–1805," in *Les Marines de Guerre Européennes, XVII–XVIIIe siècles,* ed. Martine Acerra, José Merino, and Jean Meyer (Paris:

Presses de l'Université de Paris-Sorbonne, 1987), p. 184.

42. Syrett, *Royal Navy in European Waters,* p. 167.

43. For the Corbett quotation, *Some Principles of Maritime Strategy,* p. 221. There are two published versions of this document that follows. The text quoted here follows the second, more complete version. The first, which Corbett used, appears to be a draft, made a week before the second; it is in "Admiral Kempenfelt's observations on the arrangements given to him by Lord S[andwich]," in *Barham Letters and Papers,* ed. Laughton, vol. 1, pp. 361–62 (copy in Middleton's hand, 6 January 1782). The second text appears as "Admiral Kempenfelt's Ideas about the Mode of Carrying on the War," 13 January 1782, in *The Private Papers of John, Earl of Sandwich, First Lord of the Admiralty, 1771–1782,* ed. G. R. Barnes and J. H. Owen, Publications of the Navy Records Society (London: Navy Records Society, 1938), general series vol. 78, vol. 4, pp. 80–82. The later document makes changes to the wording of the draft that appears in *Barham Letters and Papers* and adds several points, as well as three new paragraphs at the end. See the footnotes for the exact differences between the two documents, as well as glosses on certain terms.

44. The seventy-four-gun third rate was the typical example, being both heavily armed and highly maneuverable, but there was also a large, two-deck, eighty-gun third rate and a small, two-deck, forty-four-gun fifth rate. See David Lyon, *The Sailing Ship List: All the Ships of the Royal Navy, Built, Purchased and Captured 1688–1860* (London: Conway Maritime Books, 1993), chap. 5, "The American War of Independence 1776–1783," pp. 214–16.

45. "Return home that way": an allusion to a long-standing British wartime trade-protection strategy of having British merchant ships return home not through the western entrance to the Channel but "north about" Scotland, then south to London and other ports through the North Sea.

46. "Mem. By Sir C.M.," in *Barham Letters and Papers,* ed. Laughton, vol. 1, pp. 362–63.

47. For the quotation, Corbett, *Some Principles of Maritime Strategy,* p. 222.

48. Syrett, *Royal Navy in European Waters,* pp. 149–50.

49. For Lord Sandwich's statements defending his actions as First Lord, see ibid., pp. 271–364. House of Commons movement quoted in Barnes and Owen, eds., *Private Papers of John, Earl of Sandwich,* vol. 4, p. 271.

50. Syrett, *Royal Navy in European Waters,* p. 152.

51. Rodger, *Insatiable Earl,* p. 294.

52. Ibid., pp. 294–99.

53. For a general evaluation of Kempenfelt see *Oxford Dictionary of National Biography*, s.v. "Kempenfelt, Richard (1718–1782)," by J. K. Laughton, rev. Nicholas Tracy, available at www.oxforddnb.com/ (January 2008).

KAMIKAZES

The Soviet Legacy

Maksim Y. Tokarev

Throughout history, despite the influence of Alfred Thayer Mahan's concepts, continental European and Asian navies have had a simple choice to make: either to create a balanced fleet to engage another balanced fleet at sea and defeat it in one or more "decisive battles" or to take an "asymmetrical approach," creating an "unbalanced" navy, able to prevent the enemy from achieving sea control and to keep one's own vital sea lines of communication (SLOCs), if one has any, untouched by the enemy's naval forces.

In the case of Russia, the era of a blue-water, balanced navy ended with defeat in the Russo-Japanese War of 1904–1905. Russia did not lose the capability to build capital ships, nor did the context for their employment evaporate. However, the war occurred in a region where Russia had little in the way of naval infrastructure—fleet bases or, more importantly, shipbuilding and repair facilities. Russia's main sources for these capabilities were (and still are) located in the European part of the country.[1] The Russian Empire, for various reasons, had insufficient strategic motivation to restore its naval strength in the Far East, nor did it until 1945, in the Soviet era. The key SLOCs for Russia after 1905 were the ones that had been established by Peter the Great on the eve of the eighteenth century: the Baltic Sea, with the Danish straits, and the Black Sea, with the Bosporus and Dardanelles. Both routes had been long used to send the main Russian exports, wheat and fur,

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to Europe. It was vital to Russia to keep these straits open, as payments for these exports filled the empire's treasury with gold and, later, solid currency.[2]

In other words, the historical background of the Russian Navy is almost the same as that of the German navy; only the names of the straits and the relevant seas differ.[3] The two countries have similar naval imperatives that involve confined and relatively shallow seas and their littorals. For this reason the asymmetrical approach to naval power struck roots deeper and stronger than those of the Mahanian balanced, blue-water-fleet approach, although the latter was occasionally important for both.

In any case, when a naval threat emerges involving an amphibious assault on home territory or the cutting of vital SLOCs close to one's shores, a navy will shift to the asymmetrical approach. The Imperial Japanese Navy (IJN), for example, from the fall of 1944, turned—although it still had a fleet of capital ships—to the clearly asymmetrical approach of suicide attacks from the sky. There was by that time no other way for the Japanese to engage the massive U.S. Navy carrier forces. It was, of course, a poor choice from the point of view of the individual human being, but it was effective from a naval tactics standpoint.

The American task forces, built around *Essex*-class carriers, had become an "air force at sea." This was not a traditional fleet, centered on capital ships and bound for decisive battle; rather, sea battle was just one of a number of tasks for this "wet air force." From one perspective, these task forces were themselves asymmetrical, pursuing a doctrine similar to the land-warfare concept of *blitzkrieg.* This point distinguished the U.S. Navy from the other two carrier navies, the Royal Navy and the Imperial Japanese Navy; its aircraft were more than extensions of ship weapons. Even today, British naval aviators see themselves as equivalents to a surface ship's torpedo or missile officers, as part of a pool of surface-fleet weapons systems. This outlook, while it defended the Royal Navy's Fleet Air Arm from the political pressure of the Royal Air Force, effectively prevented the navy from creating a floating air force of its own.[4]

By 1944 it was beyond the IJN's capability to oppose U.S. carrier task forces symmetrically, most of its ships and aircraft being on the bottom of the Pacific. The only way available to resist was to use land-based airpower to interfere with U.S. carrier operations. This interference involved not only crashing into the carriers but also, and equally important, knocking out radar-picket destroyers, deceiving carrier fighters, and fooling fighter-direction officers with primitive but effective electronic countermeasures, etc. The tactic used to accomplish these objectives was to make divided approaches with small groups of attackers, fighters, and trackers (surveillance aircraft shadowing the force), echeloned by height and bearing. It was hoped that this tactic would diffuse and neutralize

the strength of the American maritime air force, allowing the kamikazes to get through to their targets.

The key objective in the IJN kamikaze campaign was not suicide, which was just the price. Rather, the most important points were the composition and sequencing of the attack and the suppression of air defenses.

All the tasks that were valid for the IJN Tokkotai (Special Attack) units in 1944–45 were also valid for the Soviet Navy of 1955–95. They are still valid today, by extension of Dr. Samuel Huntington's argument, for the Chinese People's Liberation Army Navy, the Cuban Revolutionary Air and Air Defense Forces, the Venezuelan air force, the Pakistani air force, and the North Korean People's Army Air Force.[5]

KAMIKAZE TACTICS AND FIGHTER DIRECTION: KILL 'EM ALL

As far as we know now, the air-defense methods developed by the U.S. Navy against the kamikazes were centered on Commander John Thach's "big blue blanket" tactics, which included early-warning destroyer pickets and fighter-direction officers (FDOs), interconnected by very-high-frequency (VHF) voice radio circuits to combat air patrol (CAP) aircraft aloft.[6] Little attention was paid to the carriers' self-defense, which was provided by their own antiair (AA) batteries. In tight quarters, AA gunfire from one ship could damage another; it was almost inevitable in battles like Okinawa. Such issues were later studied by the Soviet Navy, from such data as were available—for example, damage to USS *Enterprise* (CV 6) from a screening destroyer's friendly fire in the spring of 1945.[7]

Apparently, according to available Japanese sources, kamikaze tactics originally involved low-level bombing attacks rather than the dive-bombing runs that became famous later in the war.[8] Amazingly, low-level attacks were to that date in widespread use in Allied experience, mostly in the U.S. Army Air Forces.[9] Skip-bombing and bracket bombing were in wide use in U.S. Army bombing squadrons in the Pacific and Mediterranean starting in the spring of 1942. Specially shaped bombs were developed to skip on the water's surface and hit the target from the side. In the U.S. Navy, a few seaplane patrol squadrons and (even fewer) carrier-based night torpedo squadrons used so-called masthead-level bombing.[10] The navy preferred relatively high-level approaches and the steep dives of dive-bombing. In the Japanese case, the effectiveness of low-level bombing was limited by the relatively small size of the bombs (551 pounds) carried by the main kamikaze aircraft, the A6M2 Zero. But the initial benefits of this kind of antishipping attack—that it complicated antiaircraft targeting and allowed the bomb to hit vital parts of the ship near or even below the waterline—were not forgotten. At least two U.S. ships, the escort carrier *Bismarck Sea* (CVE 95) in February 1945

and the destroyer *Twiggs* (DD 591) in June 1945, were sunk using this method, regardless of whether the bombs were dropped before the planes crashed.[11]

Nonetheless, there was a shift in kamikaze tactics from low-level to dive-bombing, because of the necessity to damage the flight decks of the target carriers. As this kind of attack can disrupt the flight operations of the ship and its air group, it was the proper approach, and the primary targeting points on the deck were highly vulnerable: elevator platforms, island superstructure, arresting gear, parked planes, and so on. The wood sheathing of the flight decks themselves, while adding to the overall combustibility caused by burning fuel and aircraft debris, were nonetheless easy to repair.[12] It is worth noting that the regular IJN dive-bombing units *(kanbakutai),* flying such planes as the D3A Val and D4Y Judy, typically used moderate dive angles, sixty degrees or less, carefully accounting for wind direction and speed. Kamikaze Zero pilots, in contrast, sometimes made near-vertical dives, though for accurate targeting they should have used less radical angles.

In addition to the bomb load—which, contrary to popular belief, was often not left attached to the plane's hard points at impact but was meant to be armed and dropped on the final stage of the suicide dive, at least for the target first attacked—there were two other damage mechanisms: the plane's engine and burning fuel from its ruptured internal and external tanks.[13] The plane's engine—torn from the plane in the crash, still hot, burning, and charged with enormous kinetic energy—could cause significant casualties to the ship's crew, as well as start fires on the hangar deck and even deeper in the hull. Also, fuel fires on the decks were hard to bring under control. So even a single hit by a well-aimed plane could be quite enough to send a carrier to the bottom or at least put it in the shipyard for months.

The greatest problems in defending against kamikaze raids, as became clear to the U.S. Navy at Okinawa, were, first, the uncertainties—the number of planes participating, their heights and directions, the presence of fighter escort—and second, above all else, coordinated sequential strikes. The only way to cope with all the possible threat combinations was to put as many fighters as possible aloft on CAP stations and distribute self-synchronized early-warning and FDO stations on ships. However, such a blanket of protection could not be established over all the forces at sea; the early-warning destroyers were often on their own. Given this fact, the Japanese could hit the radar pickets first and then go after the main targets—the carriers—through the holes created in radar coverage.

Further, even small kamikaze raids in 1945 conducted rudimentary electronic countermeasures (ECM), in the form of strips of metal foil ("window") that when dropped could produce big blips on the carriers' radars, hiding the exact location, movement, and composition of the raid. In one of the last such occasions, a little

group of four B7A2 Grace torpedo bombers, trying to hit a British task force, including the aircraft carrier HMS *Victorious,* was divided into two ECM aircraft and two attackers, carrying one 1,760-pound bomb each.

Of course, all or most of these tactical considerations were included in the Okha program, in which a shore-based medium bomber (G4M3 Betty) carried an MXY-7 glide bomb manned by a suicide pilot, powered by rocket engine, and armed with a huge, integrated warhead instead of regular bombs. Approaching the target, the kamikaze pilot climbed into his short-winged flying bomb and, when dropped from the Betty, directed it to a hit on the target ship. Although a viable concept, it was relatively unsuccessful in employment, owing to weakness of intelligence support, lack of fighter cover, low-quality assembly, and poor skills of the young, expendable pilots.[14]

Given the overall effectiveness of kamikaze units, however, it is not an exaggeration to claim that the most effective way to suppress them was to strike their airfields. Since the beginning of carrier aviation, the earliest possible attack on enemy carriers or airfields, aimed to deny the enemy the use of its aviation, had been the main priority of the carrier air group, at least in the U.S. Navy and IJN.[15] This doctrine reflected the 1920s and 1930s thinking that carrier-based fighter planes, even properly manned and directed, could not effectively fight bombers, primarily large, land-based ones but carrier-based ones too, and in that way defend their own carriers. Later in the war, when carrier fighters had proved their air-to-air capability and radar had been installed on virtually every type of ship, there was still the problem of effective fighter direction, and the more planes, friend and foe, that were in the air the worse the problem became.

But, as previously noted, all possible fighters had to be kept aloft on CAP stations ready to engage any Japanese plane, coming from any direction, that preliminary strikes on airfields had left able to take off and reach the task force. It was on the basis of this contradiction between the number of planes airborne and the complexity of their direction and control—a situation that more or less remains to this day—that the Soviet Navy built the aviation part of its "national anticarrier doctrine."

THE NAVAL AIR FORCE OF THE SOVIET NAVY: THE ADMIRALS' STEPCHILD

Despite the fact that Russian military aviation was born within the navy, since 1922—when the Union of Soviet Socialist Republics, the USSR, was created—until today the Naval Air Force has been essentially the representative office of the Soviet/Russian Air Force (Voyenno-Vozdushnie Sily, or VVS) in the navy realm. Russian naval aviation has not possessed two features that distinguish naval air forces from those of the army or "big" national air force counterpart:

- A system of development, design, and purchase of aircraft and weapons

- A system of education and training of flying personnel (from 1956 onward).[16]

All such systems were and are still mostly in the hands of the air force (during World War II, an army air force, known as the VVS-RKKA).

Technically, the Soviet Naval Air Force (SNAF) was the part of the navy. But in fact, SNAF fixed-wing planes, with a handful of exceptions—such as the vertical/short-takeoff-and-landing (VSTOL) light-attack Yak-38 and a small family of seaplanes of the Beriev Aircraft Company (the Be-6, Be-12, Be-200)—were, as they still are, ordered by and developed for the air force. All the huge long-range, heavy bombers, such as the Tu-16 (NATO Badger family), the Tu-95 (Bear), and the Tu-22 (Backfire), were developed under the orders and specifications of the Soviet Air Force's bomber command, the DA (Dal'naya Aviatsiya, or Long-Range Aviation). Moreover, the DA's heavy bomber units constituted an integral part of the anticarrier doctrine, representing nearly a third of the forces that would be involved in strikes. Those units could temporarily fall under operational control of the SNAF. Two-thirds of the rest were organized as the MRA (Morskaya Rake-tonosnaya Aviatsiya, or Naval Guided-Missile Aviation), permanently under the operational and administrative control of the navy.

But this administrative interconnection did not remove the curtain between the navy's philosophy and ethos and those of the VVS. Soviet naval aviators, all commissioned officers, held field rank instead of deck (naval) rank and were completely out of the chain of command of naval surface ships, units, and staffs, let alone submarines. Their areas of responsibility and service were almost exclusively aviation matters. Each of the four fleet staffs, typically headed by a full admiral (three stars) or a vice admiral (two stars), had a subordinate Staff of Naval Aviation of the *X* Fleet (where *X* would be Baltic, Northern, Black Sea, or Pacific), which commanded all the fleet's air units. For each fleet's commanding general of aviation, typically a major general or lieutenant general, to whom this staff reported, there was only one possible next career step within the navy: to become commanding general of Naval Aviation of the Soviet Navy in the Naval Main Staff in Moscow, as a colonel general.

Needless to say, then, almost all naval aviators and naval air navigators (roughly similar to American naval flight officers) from the beginning of their careers kept their eyes the other way—toward an interservice transfer to the VVS, where they could reach much higher command assignments, as air marshals.[17] Moreover, all of them had friends in the VVS, because the navy did not have its own system of pilot and navigator training courses, schools, or academies. All naval aviators, navigators, and aviation engineers were (and still are) graduates of VVS air military colleges or air military engineering colleges.[18] So not only

were they aware that they represented a marginal part of the annual alumni pool, having chosen the restricted SNAF path instead of the wide-open VVS, but their early military and flying experience, the four or five years spent in an air college, had filled them with VVS ethos and traditions instead of the navy's. It is worth noting that, contrary to U.S. military aviation training practice, Soviet/Russian VVS air colleges inserted cadets into the flying pipeline roughly in the middle of the course, two years before graduation and commissioning. All Soviet military pilots could fly the modern military aircraft in almost all circumstances months before the little stars of a second lieutenant were on their shoulders.[19] There are close parallels to British Royal Air Force (RAF) practice and ethos, and to those of the World War II Luftwaffe as well.[20]

From World War II to the beginning of the 1960s the SNAF had its own fighter, attack, reconnaissance, antisubmarine warfare (ASW), bomber, and mine-torpedo forces, organized in squadrons, air regiments (two to four squadrons), and air divisions (two to three regiments).[21] At that point fighter aviation was moved from the SNAF to the VVS. Since then the core of the SNAF of each of the four fleets has been represented by attack and mine-torpedo units. The former, with Il-28, Su-17, or Su-24 attack planes and light/medium bombers, maintained the sea frontiers in shallow waters and supported amphibious assaults within their combat range. The torpedo-bomber units, in turn—the last Soviet land-based torpedo bomber, the Tu-16T, was armed with RT-1 and RT-2 rocket-propelled torpedoes, in service until 1983—formed the basis for the new Naval Guided-Missile Aviation; in 1961 mine-torpedo aviation was absorbed into the MRA, in regiments and divisions, and given the heavy burden of carrying out the first stage of anticarrier doctrine. As mentioned above, the VVS DA contributed, but the primary agencies for the planning and coordinating of anticarrier strikes were SNAF staffs.

This semi-separation of the SNAF from the navy created, without doubt, neglect on the part of the "true" naval officer communities, surface and submarine. Given the rule that no naval aviator or navigator could attain flag rank in any of the fleet staffs and that the admirals and deck-grade officers of the Soviet Navy only occasionally flew on board naval aircraft, and then as passengers only, there was no serious trust in the SNAF in general or its anticarrier role in particular.[22] The SNAF, though its actions were coordinated with surface and submarine units in war plans and staff training, would attack on its own, whereas missile-firing surface units and submarines had to complement each other, depending on overall results. The actual training of SNAF units had no significant connection with surface or submarine units below the level of "type" staffs of the fleet. Communications between SNAF aircraft aloft and guided-missile cruisers at sea or even with shore radio stations maintaining submarine circuits often failed because of

mistakes in frequencies or call signs. So the "real" admirals' common attitude toward the MRA was essentially the same as that toward shore-based missiles: order them to take off, heading for the current target position, and forget them. No wonder that the kamikaze spirit was often remembered in the ready rooms of MRA units ashore.

The Soviet Navy had itself experienced the real thing once, in 1945, in the last month of the war. While supporting an amphibious landing on the Kurile Islands, a small group of Soviet ships was attacked by several B5N2 Kate torpedo bombers from the Kurile-based Hokuto Kokutai, an outfit normally devoted to patrol and ASW over the surrounding sea. According to Japanese records, at the time of the attacks only five Kates from that unit were flyable, and four of them participated in kamikaze attacks against the Soviet amphibious assaults, armed with two-hundred-kilogram depth charges or sixty-kilogram general-purpose bombs.[23] On 12 August two of these planes were shot down by AA fire from the minesweeper *T-525* (a U.S.-built AM type), and one crashed directly into the small motor minesweeper *KT-152* (a mobilized fishing boat), which immediately sank with all hands. This was the only successful kamikaze encounter in Soviet naval history.

WHY SHOULD WE ATTACK THE U.S. CARRIERS— AND FOR GOD'S SAKE, HOW?

Unable to create a symmetrical aircraft carrier fleet, for both economic and political reasons, the Soviet Navy had to create some system that could at least deter the U.S. Navy carrier task forces from conducting strikes against the naval, military, and civilian infrastructure and installations on the Kola and Kamchatka Peninsulas, Sakhalin Island, and the shoreline around the city of Vladivostok. The only reasonable way to do so was as old as carrier aviation doctrine itself: conduct the earliest possible strike to inflict such damage that the carrier will be unable to launch its air group, or at least the nuclear-armed bombers. Also, there was an important inclination to keep the SLOCs in Mediterranean waters under the threat of massive missile strikes. These plans, given the absence of a Soviet carrier fleet, definitely rode on the wings of land-based aviation. Riding also on the shoulders of air-minded military leaders, they reached out farther than the typical five-hundred-mile combat radius of regular medium bombers, by means of something much more clever than the iron, unguided bombs that had been the main weapon of Soviet bombers for a long time.

The origins of guided antiship missiles in military aviation are German. Hs293 missiles and FX1400 guided bombs were successfully employed in 1943–44 by Luftwaffe bomber units; one of only five battleships sunk at sea solely by aviation, the Italian battleship *Roma,* was sunk by FX1400s dropped and guided by Do-217

crews of Kampfgeschwader (Bomber Squadron) 100.[24] But those weapons, being radio controlled, could have been easily disabled by relatively simple ECM measures, such as jamming, had the ECM operator known the guidance frequency. A more promising method of guidance was active radar seekers, which made such weapons independent of the carrying platform after launch. The first air-to-surface missile with such guidance and targeting was created in Sweden in the early 1950s and entered service with the Swedish air force as the Rb04 family.[25]

Regardless of whether it had the help of intelligence information, the Soviet weapons industry managed to develop its own device at roughly the same time, but using semiactive targeting. The first such missile, the KS-1 Kometa (Comet), started development in 1951 and entered service two years later. From the beginning, and in contrast to all other such systems, Soviet antiship missiles were designed to kill carriers and other big ships by hitting pairs. The warhead of the KS-1 contained more than eight hundred kilograms of explosive, and the missile generally resembled a little unmanned MiG-15 fighter plane. The old Japanese Okha concept had clearly been adopted entirely, with the exception of a sacrificial pilot.

It is worth noting that the nuclear strike/deterrent role was exclusive to U.S. aircraft carriers for less than a single year, from the first assembly of a nuclear bomb on board a carrier in December 1951 to the successful trial launch of a Regulus nuclear cruise missile from a submarine in 1952.[26] The carriers' shared (i.e., with submarines) nuclear role lasted up to 1964, when *George Washington*–class ballistic-missile submarines went on patrol on a regular basis. From that time onward, as Adm. James Stockdale recalls, the primary role of the carrier air groups, even fighter squadrons, became the close support of land combat, as well as land interdiction.[27] The beginning of the Vietnam War featured this mode of employment. SNAF staffs found that the main skills of the carriers' attack squadrons (medium and light) changed twice. From 1964 to 1974, during the Vietnam War, it was mostly land targets that attack squadrons were intended to strike; from 1975 to the DESERT STORM operation in 1990 the carrier attack community shifted its focus to readiness to engage Soviet surface fleets at sea, developing the Harpoon guided-missile family.[28] During the first Iraq war the main effort switched again, to close air support and battlefield interdiction ashore. While it was not going to deal with the carrier attack planes directly, the SNAF was watching with interest the fluctuation in the U.S. Navy's fleet air-defense inventory and tactics, driven by changes in the targets between open sea and continental landscape. It was important to find the difference between the typical CAP tactics at sea and barrier CAP duty offshore, calculating the average times that F-4 and F-14 interceptors remained on station between aerial refueling and rotation of patrols.

During this time the Soviet Navy, sharing with the U.S. Navy the ballistic-missile path as the main one for deterrence, actively developed cruise missiles for launch from submarines, as well as from surface ships. The development of air-launched antiship missiles was given secondary priority and was constantly caught up under VVS control, with consequent delays. The submarine-launched missiles, in contrast, made great strides and could strike targets at ranges up to seven hundred kilometers. It was not until 1982, when the NORTHERN WEDDING naval exercise placed carrier battle groups near enough to the Kola Peninsula for fully loaded A-6E Intruders to reach the Severomorsk main naval base and return, that U.S. carriers showed how they really intended to hit Soviet land targets, with nuclear weapons or without them. But, as is usual for the militaries of autocratic political regimes or garrison states, the development of doctrines and weapon systems, once started, was hard to change, even in a clearly changed environment.

The U.S. carrier task force had first been considered a real threat to Soviet shore targets in 1954, when intelligence confirmed the presence of nuclear weapons (both bombs and Regulus missiles) on board the carriers, as well as planes that could deliver them (AJ-1s and A3Ds). The first anticarrier asset tested in the air at sea was of American origin—the Tu-4 heavy bomber, a detailed replica of the Boeing B-29 Superfortress. The missile-carrying model, the Tu-4KS, was introduced with the Black Sea Fleet Air Force in 1953. The plane was able to carry two KS missiles and was equipped with a K-1M targeting radar. Because of the need to guide the missile almost manually from the bomber, the aircraft had to penetrate the antiair-warfare killing zone of the task force to as close as forty kilometers from the carrier or even less. The kamikaze-like fate was abruptly switched from the single pilot of an Okha to the entire crew of a Tu-4KS. Subsequent efforts to develop autonomous active-radar missiles (the K-10, K-16, KSR-2, and finally KSR-5) were more or less unsuccessful. Though the semiactive KS placed the carrying plane under serious threat, it was considerably more reliable than the active-radar missiles.

The next generation of planes was represented by the series known to NATO as the Badger (the Tu-16KS, Tu-16K-10/16, Tu-16KSR, with reconnaissance performed by the Tu-16R, or Badger E). This plane was not the best choice for the job, but it was the only model available at the beginning of the 1960s. The service story of the Badger family is beyond the scope of this article, but it is noteworthy that the overall development of anticarrier strike doctrine grew on its wings.[29] The first and foremost issue that had to be considered by SNAF staffs was the approach to the target, which involved not only the best possible tactics but the weapon's abilities too. For a long time, prior to the adoption of antiradiation missiles, and given the torpedo-attack background of MRA units, there was

a strong inclination toward low-level attack. Such a tactic comported with the characteristics of the missiles' jet engines and the poor high-altitude (and low-temperature) capabilities of their electronic equipment. The typical altitude for launch was as low as two thousand meters; that altitude needed to accommodate the missile's four-to-six-hundred-meter drop after launch, which in turn was needed to achieve a proper start for its engine and systems. Although the SNAF experimented with high-altitude (up to ten thousand meters) and moderate-altitude approaches—and until it had been confirmed that the carrier's airborne early-warning (AEW) aircraft, the Grumman E-2 Hawkeye, could detect the sea-skimming bombers at twice the missile's range—the low-level approach was considered the main tactic, at least for half the strike strength.

FLYING THE BACKFIRE IN DISTANT-OCEAN COMBAT: A ONE-WAY TICKET

The MRA's aircraft, such as the Tu-16 missile-launching and the Tu-95 recon-naissance and targeting aircraft, were relatively slow, and they were evidently not difficult targets for U.S. fighters. They were large targets for the AIM-7 Sparrows shot from F-4 Phantoms. The problem for the aircraft was detection by AEW assets. If E-2 (or U.S. Air Force E-3) crews did their job well, even surface ships, such as the numerous *Oliver Hazard Perry*–class guided-missile frigates, could contribute to shattering a Soviet air raid. Despite the supersonic speed of the KSR-5 missiles, it was not a big problem to catch the bombers before they reached the launch point.

Those planes, by the way, had a very intricate system for the aircrew (of seven to eleven, depending on the model and mix of officers and enlisted personnel) to save themselves by bailing out. By comparison, the U.S. A3D's arrangements could be considered very effective. While the tail gunner and radio operator (en-listed or warrant officers), sitting in the small aft cockpit, could bail out by eject-ing downward (which caused some casualties in accidents on takeoff and land-ing), the remainder had to leave the plane (by means of a belt transporter on the Tu-95, free-falling on the Tu-16) through a single emergency hatch in the main cockpit floor. If the plane lost stability, it was almost impossible. Losing stability was, in fact, quite possible, owing to the huge asymmetric wing drag caused by damaged propellers on the Tu-95 or the long, heavy wing itself of the Tu-16 (drag that could not be countered with thrust, because of the placement of the engine nacelles close to the fuselage). Ditching a Tu-16 was definitely much worse than bailing out from one: the main cockpit has only a narrow emergency hatch over-head, and the aft cockpit has none at all—the tail crew members had to escape through the two little "leaf"-type windows of the tail gunner's compartment, just above the gunhouse.[30] Inflight refueling, because of the complicated behavior of

these big birds at low speed and the primitive wing-to-wing technology used in the USSR, was almost as dangerous as a combat sortie with live ordnance. All this amounted to sufficient grounds for SNAF crews to consider themselves "suicide bombers" even without the enemy's presence.

The picture changed with the Tu-22M, Tu-22M-2, and Tu-22M-3—the Back-fire family—which could reach almost Mach 2. (The pure Tu-22, with the engines mounted on the tail, was used as a photoreconnaissance plane only; now only the M-3 model is in service.) The bird has a crew of just four: pilot, copilot, and two navigators—the first *shturman* (the destination navigator) and second *shturman* (the weapons-system operator, or WSO). All of them are commissioned officers, males only, the crew commander (a pilot in the left seat, age twenty-six to thirty) being not less in rank than captain. All the seats eject upward, and the overall sur-vivability of the plane in combat is increased, thanks not only to greater speed but also to chaff launchers, warning receivers, active ECM equipment, and a paired tail gun that is remotely controlled by the second navigator with the help of opti-cal and radar targeting systems. This plane significantly improved the combat effectiveness of the MRA.

In theory and in occasional training, the plane could carry up to three Kh-22MA (or the MA-1 and MA-2 versions) antiship missiles, one under the belly and two more under the wings. But in anticipated real battle conditions, seasoned crews always insisted on just one missile per plane (at belly position), as the wing mounts caused an enormous increase in drag and significantly reduced speed and range.

The Kh-22 missile is not a sea skimmer. Moreover, it was designed from the outset as a dual-targeted missile, able to strike radar-significant shore targets, and the latest version can also be employed as an antiradar missile. The first and most numerous model of this missile, the Kh-22MA, had to see the target with its own active radar seeker while still positioned under the bomber's belly. But the speed, reliability, and power of its warhead are quite similar to those of the Soviet submarine-launched sea skimmers. The price for those capabilities is the usual one for a Soviet weapon—huge weight and dimensions. The Kh-22 is more than eleven meters long and weighs almost six tons, combat ready. The missile can travel at Mach 3 for four hundred kilometers. Usually it contains more than a ton of an explosive, but it could carry a twenty-to-two-hundred-kiloton nuclear warhead instead.

There is a pool of jokes within the Backfire community about the matter of who is more important in the Tu-22M's cockpit, pilots or navigators. The back-seaters (both the navigators' compartments are behind the pilots') often claim that in a real flight the "front men" are usually doing nothing between takeoff and landing, while the *shturman*s are working hard, maintaining communications,

navigating, and targeting the weapon. In reality, the most important jobs are in the hands of the WSO, who runs the communication equipment and ECM sets as well.

The doctrine for direct attacks on the carrier task force (carrier battle group or carrier strike group) originally included one or two air regiments for each aircraft carrier—up to seventy Tu-16s. However, in the early 1980s a new, improved doctrine was developed to concentrate an entire MRA air division (two or three regiments) to attack the task force centered around one carrier. This time there would be a hundred Backfires and Badgers per carrier, between seventy and eighty of them carrying missiles. As the NORTHERN WEDDING and TEAM SPIRIT exercises usually involved up to three carrier battle groups, it was definitely necessary to have three combat-ready divisions both in northern Russia and on the Pacific coast of Siberia. But at the time, the MRA could provide only two-thirds of that strength—the 5th and 57th MR Air Divisions of the Northern Fleet and the 25th and 143rd MR Air Divisions of the Pacific Fleet. The rest of the divisions needed—that is, one for each region—were to be provided by the VVS DA. The two air force divisions had the same planes and roughly the same training, though according to memoirs of an experienced MRA flyer, Lieutenant General Victor Sokerin, during joint training DA crews were quite reluctant to fly as far out over the open ocean as the MRA crews did, not trusting enough in their own navigators' skills, and tried to stay in the relative vicinity of the shore.[31] Given the complexity of a coordinated strike at up to two thousand miles from the home airfield, navigation and communication had become the most important problems to solve.

Being latent admirers of the VVS ethos, MRA officers and generals always tried to use reconnaissance and targeting data provided by air assets, which was also most desired by their own command structure. Targeting data on the current position of the carrier sent by surface ships performing "direct tracking" (a ship, typically a destroyer or frigate, sailing within sight of the carrier formation to send targeting data to attack assets—what the Americans called a "tattletale"), were a secondary and less preferable source. No great trust was placed in reports from other sources (naval radio reconnaissance, satellites, etc.). Lieutenant General Sokerin, once an operational officer on the Northern Fleet NAF staff, always asked the fleet staff's admirals just to assign him a target, not to define the time of the attack force's departure; that could depend on many factors, such as the reliability of targeting data or the weather, that generate little attention in nonaviation naval staff work. The NAF staff had its own sources for improving the reconnaissance and targeting to help plan the sorties properly. Sokerin claims that "no Admirals grown as surface or submarine warriors can understand how military aviation works, either as whole or, needless to say, in details."[32]

As it was, the crews of the field-parked Backfires, in the best aviation tradition, had to accept the primary flight data during briefings in the regiments' ready rooms. Of course, they had the preliminary plans and knew roughly the location of the incoming air-sea battle and the abilities of the enemy—the task force's air defenses. In fact, the sorties were carefully planned, going in. But planning was very general for the way out. The following conversation in the ready room of the MRA's 183rd Air Regiment, Pacific Fleet NAF, which occurred in the mid-1980s, shows this very honestly. A young second lieutenant, a Backfire WSO fresh from the air college, asked the senior navigator of the regiment, an old major: "Sir, tell me why we have a detailed flight plan to the target over the vast ocean, but only a rough dot-and-dash line across Hokkaido Island on way back?" "Son," answered the major calmly, "if your crew manages to get the plane back out of the sky over the carrier by any means, on half a wing broken by a Phoenix and a screaming prayer, no matter whether it's somewhere over Hokkaido or directly through the moon, it'll be the greatest possible thing in your entire life!" There may have been silent laughter from the shade of a kamikaze in the corner of the room at that moment.

The home fields of MRA units were usually no more than three hundred kilometers from the nearest shoreline (usually much less). Each air regiment had at least two airstrips, each no less than two thousand meters long, preferably concrete ones, and the Engineering Airfield Service could support three fully loaded sorties of the entire regiment in thirty-six hours. The efforts of shore maintenance were important, as all the missiles, routinely stored in ordnance installations, had to be quickly fueled and prepared for attachment to the planes before takeoff.

The takeoff of the regiment usually took about half an hour. While in the air, the planes established the cruise formation, maintaining strict radio silence. Each crew had the targeting data that had been available at the moment of takeoff and kept the receivers of the targeting apparatus ready to get detailed targeting, either from the air reconnaissance by voice radio or from surface ships or submarines. The latter targeting came by high-frequency (HF) radio, a channel known as KTS Chayka (the Seagull short-message targeting communication system) that was usually filled with targeting data from the MRSC Uspekh (the Success maritime reconnaissance targeting system), built around the efforts of Tu-95RC reconnaissance planes. The Legenda (Legend) satellite targeting system receiver was turned on also, though not all planes had this device. The Backfire's own ECM equipment and radar-warning receivers had to be in service too. With two to four targeting channels on each plane, none of them radiating on electromagnetic wave bands, the crowd of the Backfires ran through the dark skies to the carrier task force.

WHERE ARE THOSE MAD RUSSIANS?

Generally, detailed data concerning the U.S. air-defense organization were not available to Soviet naval planners. What they knew was that F-4, and later F-14, planes could be directed from three kinds of control points: the Carrier Air Traffic Control Center on the carrier itself, an E-2 aloft, or the Air Defense Combat Center of one of the Aegis cruisers in formation. Eavesdropping on the fighter-direction VHF and ultrahigh-frequency radio circuits by reconnaissance vessels and planes gave Soviet analysts in 1973–74 roughly the same results as were subsequently noted by late Vice Admiral Arthur Cebrowski: "Exercise data indicated that sometimes a squadron of F-14s operating *without* a central air controller was more effective in intercepting and destroying attackers than what the algorithms said centralized control could provide."[33]

SNAF planners found that interceptor crews were quite dependent on the opinions of air controllers or FDOs, even in essence psychologically subordinate to them. So the task of the attackers could be boiled down to finding a way to fool those officers—either to overload their sensors or, to some degree, relax their sense of danger by posing what were to their minds easily recognizable decoys, which were in reality full, combat-ready strikes. By doing so the planners expected to slow the reactions of the whole air-defense system, directly producing the "golden time" needed to launch the missiles. Contrary to widespread opinion, no considerable belief was placed in the ability of launched missiles to resist ECM efforts, but the solid and partially armored airframe of the Kh-22 could sustain a significant number of the 20 mm shells of Close-In Weapon System (CIWS) guns. (Given the even more rigid airframe of the submarine-launched missiles of the Granit family —what NATO called the SS-N-19 Shipwreck—it would have been much better for the U.S. Navy to use a CIWS of at least 30 mm caliber.)

Things could become even worse for the carriers. In some plans, a whole VVS fighter air regiment of Su-15TM long-range interceptors would have escorted the MRA division, so that the F-14s over the task force might have been overwhelmed and crowded out by similar Soviet birds. Though the main targets for the Sukhois, which as pure interceptors were barely capable of dogfighting, were the E-2 Hawkeyes, it is possible that some F-14s could have become targets for their long-range air-to-air missiles with active radar seeker (such as R-33, similar to the AIM-54). Sure enough, no Sukhoi crews had been expected to return, mainly because of their relatively limited range and the fact that they, mostly unfamiliar with long flights over the high seas, depended on the bomber crews' navigation skills.

Long before reaching the target, at a "split" position approximately five hundred kilometers from the carrier task force, and if the target's current position had been somehow roughly confirmed, the air division's two regimental formations

would divide into two or three parts each. The WSO of each plane adopted his own battle course and altitude and a flight plan for each of his missiles. As we've seen, the early versions of Kh-22 had to acquire the target while on the plane's hard points, making this a terrible job very close to that of a World War II kamikaze, because between initial targeting of the carrier by the plane's radar and missile launch the Backfire itself was no more than a supersonic target for AIM-54s.

The more Phoenixes that could be carried by a single interceptor, the more Backfires that could be smashed from the sky prior to the launch of their Kh-22s. So if the Backfires were the only real danger to U.S. carriers up to the fall of the USSR, it would have been much better for the U.S. Navy to use the F-111B, a realization of the TFX concept, than the F-14. A Tomcat could evidently carry the same six Phoenixes as an F-111B, but there were the data that the "Turkey" could not bring all six back to the carrier, owing to landing-weight limitations. Imagine a fully loaded Tomcat with six AIM-54s reaching its "bingo point" (limit of fuel endurance) while on barrier CAP station, with air refueling unavailable. The plane has to land on the carrier, and two of its six missiles have to be jettisoned. Given the alternating sorts of approaches by Backfire waves, reducing the overall number of long-range missiles by dropping them into the sea to land F-14s safely seems silly. Admiral Thomas Connolly's claims in the 1960s that killed the F-111B in favor of the F-14 ("There isn't enough power in all Christendom to make that airplane what we want!") could quite possibly have cost the U.S. Navy a pair of carriers sunk.[34]

The transition of the U.S. Navy from the F-14 to the F/A-18 made the anti-Backfire matter worse. Yes, the Hornet, at least the "legacy" (early) Hornet, is very pleasant to fly and easy to maintain, but from the point of view of range and payload it is a far cry from the F-111B. How could it be otherwise for a jet fighter that grew directly from the lightweight F-5? Flying and maintaining naval airplanes are not always just for fun; sometimes it takes long hours of hard work to achieve good results, and it had always been at least to some degree harder for naval flyers than for their shore-based air force brethren doing the same thing. Enjoying the Hornet's flying qualities at the expense of the Phoenix's long-range-kill abilities is not a good trade-off. Also, the Hornet (strike fighter) community evidently has generally replaced its old fighter ethos with something similar to the "light attack," "earthmover" philosophy of the Vietnam-era A-4 (and later A-7) "day attack" squadrons; all the wars and battle operations since 1990 seem to prove it. It is really good for the present situation that the ethos of F/A-18 strike fighter pilots is not the self-confident bravado of the F-14 crews but comes out of more realistic views. Yet for the defense of carrier task forces, it was not clever to abandon the fast, heavy interceptor, able to launch long-range air-to-air missiles—at least to abandon it completely.

To fool the FDOs, the incoming Backfires had to be able to saturate the air with chaff. Moreover, knowing the position of the carrier task force is not the same as knowing the position of the carrier itself. There were at least two cases when in the center of the formation there was, instead of the carrier, a large fleet oiler or replenishment vessel with an enhanced radar signature (making it look as large on the Backfires' radar screens as a carrier) and a radiating tactical air navigation system. The carrier itself, contrary to routine procedures, was steaming completely alone, not even trailing the formation. To know for sure the carrier's position, it was desirable to observe it visually. To do that, a special recce-attack group (*razvedyvatel'no-udarnaya gruppa,* RUG) could be detached from the MRA division formation. The RUG consisted of a pair of the Tu-16R reconnaissance Badgers and a squadron of Tu-22M Backfires. The former flew ahead of the latter and extremely low (not higher than two hundred meters, for as long as 300–350 kilometers) to penetrate the radar screen field of the carrier task force, while the latter were as high as possible, launching several missiles from maximum range, even without proper targeting, just to catch the attention of AEW crews and barrier CAP fighters. Meanwhile, those two reconnaissance Badgers, presumably undetected, made the dash into the center of the task force formation and found the carrier visually, their only task to send its exact position to the entire division by radio. Of course, nobody in those Badgers' crews (six or seven officers and men per plane) counted on returning; it was 100 percent a suicide job.

After the RUG sent the position of the carrier and was shattered to debris, the main attack group (UG, *udarnaya gruppa*) launched the main missile salvo. The UG consisted of a demonstration group, an ECM group armed with antiradar missiles of the K-11 model, two to three strike groups, and a post-strike reconnaissance group. Different groups approached from different directions and at different altitudes, but the main salvo had to be made simultaneously by all of the strike groups' planes. The prescribed time slot for the entire salvo was just one minute for best results, no more than two minutes for satisfactory ones. If the timing became wider in an exercise, the entire main attack was considered unsuccessful.

Moreover, in plans, three to five planes in each regimental strike had to carry missiles with nuclear warheads. It was calculated that up to twelve hits by missiles with regular warheads would be needed to sink a carrier; by contrast, a single nuclear-armed missile hit could produce the same result. In any case, almost all Soviet anticarrier submarine assets had nuclear-armed anticarrier missiles and torpedoes on board for routine patrols.[35]

Having launched their missiles, it was up to the crews, as has been noted above, to find their way back. Because of the possibility of heavy battle damage,

it was reasonable to consider the use of intermediate airfields and strips for emergency or crash landings, mainly on the distant islands, even inhabited ones, in the Soviet or Warsaw Pact exclusive economic zones. The concept of using the Arctic ice fields for this purpose was adopted, by not only the MRA but the VVS (interceptors of the Su-15, Tu-128, and MiG-25/31 varieties) too. Though the concept of maintaining such temporary icing strips had been accepted, with the thought that planes could be refueled, rearmed, and even moderately repaired in such a setting, it was not a big feature of war plans. The VVS as a whole was eager to use captured airfields, particularly ones in northern Norway, but the MRA paid little attention to this possibility, because the complexity of aerodrome maintenance of its large planes, with their intricate weapons and systems, was considered unrealistic at hostile bases, which would quite possibly be severely damaged before or during their capture.

All in all, the expected loss rate was 50 percent of a full strike—meaning that the equivalent of an entire MRA air regiment could be lost in action to a carrier task force's air defenses, independent of the strike's outcome.

AN *UMI YUKABA* FOR THE SURFACE AND SUBMARINE COMMUNITIES

Although the first massive missile strikes on carrier task forces had to be performed by SNAF/DA forces, there were at least two other kinds of missile carriers in the Soviet Navy.[36] The first were guided-missile ships, mostly in the form of cruisers (CGs), those of Project 58 (the NATO Kynda class), Project 1144 (*Kirov* class), and Project 1164 (*Slava* class).[37] Moreover, all the "aircraft-carrying cruisers" of Project 1143 (the *Kiev* class, generally thought of as aircraft carriers in the West) had the same antiship cruise missiles as the CGs of Project 1164. Also, the destroyers of Project 956 (*Sovremenny* class) could be used in this role, as well as all the ships (the NATO Kresta and Kara classes) armed with ASW missiles of the Type 85R/RU/RUS (Rastrub/Metel, or Socket/Snowstorm) family, which could be used in an antiship mode. The main form of employment of guided-missile ships was the task force (*operativnoye soedinenie,* in Russian), as well as the above-noted direct-tracking ship or small tactical groups of ships with the same job (KNS or GKNS, respectively, in Russian).

The other anticarrier missile carriers were nuclear-powered guided-missile submarines (SSGNs), in a vast number of projects and types, using either surface or submerged launch. The most deadly of these were the Project 949A boats (NATO Oscar IIs), with P-700 Granit missiles. (The SSGN *Kursk,* recently lost to uncertain causes, was one of them.) The operational organization for the submarine forces performing the anticarrier mission was the PAD (*protivo-avianosnaya*

divisiya, anticarrier division), which included the SSGNs, two for each target carrier, and nuclear-powered attack submarines for support. In sum, up to fifteen nuclear submarines would deploy into the deep oceans to attack carrier task forces. One PAD was ready to be formed from the submarine units of the Northern Fleet, and one, similarly, was ready to assemble in the Pacific Fleet.

A detailed description of the tactics and technologies of all those various assets is beyond the aim of this article, but one needs an idea of how it worked as a whole. The core of national anticarrier doctrine was cooperative usage of all those reconnaissance and launch platforms. While they understood this fact, the staffs of the Soviet Navy had no definite order, manual, or handbook for planning anticarrier actions except the "Tactical Guidance for Task Forces" (known as TR OS-79), issued in 1979 and devoted mainly to operational questions of surface actions, until 1993, when "Tactical Guidance for Joint Multitype Forces" entered staff service. The latter document was the first and ultimate guidance for the combined efforts of the MRA, surface task forces, and submerged PADs, stating as the overall goal the sinking of the designated target carriers at sea with a probability of 85 percent.

It is no secret that the officers of the surface community who served on the guided-missile ships counted on surviving a battle against a U.S. Navy carrier air wing for twenty or thirty minutes and no more. In reality, the abilities of the surface-to-air missiles (SAMs) installed on the ships were far less impressive than the fear they drew from U.S. experts. For example, the bow launcher of the Storm SAM on the Kresta- and Kara-class ASW destroyers shared a fire-control system with the Metel ASW missile. It would be quite possible for U.S. aircraft to drop a false sound target (imitating a submarine) ahead of the Soviet formation to be sure that the bow fire-control radars would be busy with the guidance of ASW missiles for a while. The bow SAM launchers of the destroyers of these classes would be useless all this time, allowing air attacks from ahead. Even "iron" bombs could mark the targets.

SSGNs were evidently considered in the West to be the safest asset of the Soviet Navy during an attack, but it was not the case. The problem was hiding in the radio communications required: two hours prior to the launch, all the submarines of the PAD were forced to hold periscope depth and lift their high-frequency-radio and satellite communication antennas up into the air, just to get the detailed targeting data from reconnaissance assets directly (not via the staffs ashore or afloat); targeting via low- or very-low-frequency cable antennas took too much time and necessarily involved shore transmitting installations, which could be destroyed at any moment. There was little attention paid to buoy communication systems (because of the considerable time under Arctic ice usual for

Soviet submarines). Thus the telescoping antennas in a row with the periscopes at the top of the conning tower were the submarine's only communication means with the proper radio bandwidth. Having all ten or fifteen boats in a PAD at shallow depth long before the salvo was not the best way to keep them secure. Also, the salvo itself had to be carried out in close coordination with the surface fleet and MRA divisions.

However, the main problem was not the intricacy of coordination but targeting —that is, how to find the carrier task forces at sea and to maintain a solid, constant track of their current positions. Despite the existence of air reconnaissance systems such as Uspekh, satellite systems like Legenda, and other forms of intelligence and observation, the most reliable source of targeting of carriers at sea was the direct-tracking ship. Indeed, if you see a carrier in plain sight, the only problem to solve is how to radio reliably the reports and targeting data against the U.S. electronic countermeasures. Ironically, since the time lag of Soviet military communication systems compared to the NATO ones is quite clear, the old Morse wireless telegraph used by the Soviet ships was the long-established way to solve that problem. With properly trained operators, Morse keying is the only method able to resist active jamming in the HF band. For example, the Soviet diesel-electric, Whiskey-class submarine *S-363,* aground in the vicinity of the Swedish naval base at Karlskrona in 1981, managed to communicate with its staff solely by Morse, despite a Swedish ECM station in the line of sight. All the other radio channels were effectively jammed and suppressed. While obsolete, strictly speaking, and very limited in information flow, Morse wireless communication was long the most serviceable for the Soviet Navy, owing to its simplicity and reliability.[38]

But the direct tracker was definitely no more than another kind of kamikaze. It was extremely clear that if a war started, these ships would be sent to the bottom immediately. Given that, the commanding officer of each had orders to behave like a rat caught in a corner: at the moment of war declaration or when specifically ordered, after sending the carrier's position by radio, he would shell the carrier's flight deck with gunfire, just to break up the takeoff of prepared strikes, fresh CAP patrols, or anything else. Being usually within the arming zone of his own antiship missiles and having no time to prepare a proper torpedo salvo, the "D-tracker's" captain had to consider his ship's guns and rocket-propelled depth charges to be the best possible ways to interfere with flight-deck activity. He could even ram the carrier, and some trained their ship's companies to do so; the image of a "near miss," of the bow of a Soviet destroyer passing just clear of their own ship's quarter, is deeply impressed in the memory of some people who served on board U.S. aircraft carriers in those years.

CAREFUL ESTIMATION OF COST IS LIKE AN ICY SHOWER (OF COMMON SENSE)

In any case, there was a time when the U.S. Navy's aircraft carriers were the worst enemies of the whole Soviet Navy. That time is in the past now, but in spite of changed emotions, the "national anticarrier approach" as a model for other navies is still alive and could be applied to the current U.S. carrier fleet. The Chinese, for example, have added ballistic missiles to this general approach, in a way that has been effectively scaring U.S. naval staffs and analysts. While this is not the time to remember the blood and horror of Okinawa, let me state that such a campaign, being asymmetrical by nature, requires such huge human sacrifice that there is no great difference from the kamikaze conception, if scholars are objective about it.

One can imagine how strong would be the attempts of U.S. armed forces and their allies in the region to find and bomb DF-21D launchers, with enormous loss of lives, both young Westerners and Asians in uniform and collateral victims in the heavily populated mainland of China. Moreover, such a ballistic weapon cannot be deadly without active radar guidance, and since no properly reliable phased-array antenna can be stuffed into multiple, independently targetable re-entry vehicles, it is doubtful that the use of those missiles against carriers makes sense without nuclear warheads. Also, unfortunately, while posing a great threat to U.S. carriers at sea, this kind of asymmetrical naval warfare is not a cent less expensive, proportionally, for the country with the balanced carrier fleet than for the challenger.

Last, but not least—this kind of naval warfare claims human blood. Wars inevitably end, but the people killed in action cannot return to life. The deaths of brave and skilled warriors make the nation bloodless and weak. We Russians have always won our wars by obligatory military drafts: our victories, being of the land-warfare kind every time, have been the victories of conscripts, without exception. Thus it is the greatest job for each of our career military officers, despite rank or service—as it should be for those of any country—to return these youngsters to their mothers and girls alive. People would probably feel much better if they could find ways to achieve unbreakable deterrence rather than to mount an irresistible strike. The strikes themselves are always defendable in this real world, but there is no invincible defense.

1. Y. Apushkin, *The Russo-Japanese War, 1904–1905* [in Russian] (Moscow: Russian Friendship, 1910).

2. Col. Miroslav Morozov, chief historian of the War History Institute of Russian Ministry of Defense, 2001–2009, e-mail conversations with the author, 2001–2012.

3. Friedrich Ruge, *Der Seekrieg 1939–1945* (Stuttgart, FRG: K. F. Koehler, 1954).

4. Cdr. Nigel "Sharkey" Ward, RN, "RAF Unsuitable for Carrier Operations," *Defence of Our Nation* (blog), 9 March 2013, sharkeysworld2.blogspot.com/.

5. Samuel P. Huntington, *The Soldier and the State* (Cambridge, Mass.: Belknap of Harvard Univ. Press, 1998).

6. Interestingly, the postwar efforts of the Midway hero (the fighter pilot, later an admiral) John S. Thach in the area of antisubmarine warfare, owing to the emerging Soviet submarine threat, were built around the same general principles—establishing a wide sensor field (this time acoustic instead of radar, using the sonars of helicopters and destroyers) and hanging the hitting power aloft (in carrier-borne antisubmarine aircraft) waiting to react to the contacts as quickly as possible. All-force VHF radio circuits were as vital here as in the previous antiair-warfare case.

7. "Damage Reports: Kyushu and Shikoku," *USS Enterprise CV-6,* n.d., cv6.org/.

8. O. Leyko, *Kamikaze Story* (Moscow: University Press, 1989).

9. The first use of skip-bombing as such was by Royal Air Force Bomber Command Blenheim medium-bomber units in the North Sea in 1940 against German shipping, with 250-pound bombs. Later the method was widely adopted in Soviet naval air forces, where mine-torpedo, attack, and fighter-bomber units employed high-explosive bombs of from a hundred to a thousand kilograms.

10. One of them was Night Torpedo Squadron (VT[N]) 90, on board USS *Enterprise* (CV 6) in 1944, flying solely night antishipping missions. None of the pilots of the squadron was happy about the small chances they had to score a bomb hit on a famous target. See Edward P. Stafford, *The Big E: The Story of the USS* Enterprise (New York: Random House, 1962).

11. For *Bismarck Sea,* see William T. Y'Blood, *The Little Giants: U.S. Escort Carriers against Japan* (Annapolis, Md.: Naval Institute Press, 1987). The *Twiggs* case is more interesting —the ship's battle report indicates that a B6N Jill bomber that crashed into its deck aft had dropped a torpedo that hit the bow a few seconds before; Theodore Roscoe, *United States Destroyer Operations in World War II* (Annapolis, Md.: Naval Institute Press, 1953), p. 262 (in Russian translation). However, the report notes that the torpedo was dropped no more than three hundred feet from the destroyer, almost dead ahead. It is hard to believe that a Type 91 torpedo could have armed itself in such a short run. It is more likely, considering the damage caused, that the weapon was a five-hundred-kilogram bomb dropped at low level.

12. The thin wooden flight decks of the main U.S. fleet carriers, the *Essex* class, did not do much to stop kamikazes' bombs from penetrating inside the ships, though they effectively stopped the crashing planes themselves.

13. For the bomb load, see discussions at *J-aircraft.com: Japanese Aircraft, Ships, & Historical Research,* j-aircraft.com.

14. Osamu Tagaya, *Mitsubishi Type 1 Rikko "Betty" Units of World War 2* (Oxford, U.K.: Osprey, 2001).

15. Thomas Hone, Norman Friedman, and Mark David Mandeles, *American and British Aircraft Carrier Development, 1919–1941* (Annapolis, Md.: Naval Institute Press, 1999).

16. Just before and during World War II, the Soviet Navy had had its own flying and air engineering training courses, which were partially disbanded and merged with VVS training pipelines up to 1955.

17. Even the small group of enthusiasts in the fixed-wings groups created for the aircraft-carrying cruisers of the *Kiev* class—initially two attack-air regiments, the 279th of the Northern Fleet and the 311th of the Pacific Fleet, flying Yak-38s—had served most of their military service in VVS, as test pilots of the Fighter Evaluation School or staff members. No more than a hundred pilots at any given time from 1973 till 1993 were qualified

for carrier VSTOL operations, and no fewer than ninety of them finally retired from the VVS rather than the navy.

18. Although often referred to as "trade schools," the Soviet military educational installations were closer to the U.S. service academies (the U.S. Military, Naval, Air Force, and Coast Guard Academies), as all were four to five years long and, aside from commissions, their graduates received college-level educations similar to those of civilian colleges or universities, with the same diplomas. So in the (rudimentary but obligatory) English course, the Soviet Kaliningrad naval educational installation was referred to as "Kaliningrad Naval College."

19. Of the ten VVS air colleges in the pilot pipeline prior to 1993, only one (the Balashov Higher Military Aviation College for Pilots, in central Russia) was meant to train pilots for big, multiengine planes. All the others produced fighter pilots, using L-29/39s and MiG-21s as "flying school tables." Thus, even on the big SNAF planes, of all the Tupolev models, an advancing number of pilots had fighter training in their backgrounds.

20. It is interesting to evaluate the differences between the RAF Harrier GR.3 unit and the Royal Navy Fleet Air Arm Sea Harrier FRS.1 unit on board HMS *Invincible* during the Falklands War of 1982. The RAF pilots claimed that the "ship exists for us and it should provide for us all the needed." See Ward, "RAF Unsuitable for Carrier Operations."

21. The planet's first spaceman, Yuri Gagarin, entered the space program for training as a first lieutenant, a jet fighter pilot in the Northern Fleet. In the VVS tradition, attack aircraft are not bombers, even formally. From their roots in the Il-2, attack aircraft in the USSR were primarily strafers, always armored and armed with guns, and might have no bombing equipment at all. The only real "attack" plane in the U.S. inventory, from that standpoint, is the A-10 Thunderbolt 2. Historically, bombing units of the SNAF had flown land-based, twin-engine dive-bombers, beginning with the Pe-2. Torpedo-bomber units of the SNAF had the secondary task of aerial minelaying.

22. A small number of the Naval College graduates with military occupational specialties

in navigation or ASW were trapped in the crews of Tu-16 or Tu-142 units of the SNAF. They had no chance to return to the surface or submarine fleets, as they had changed their ranks at commissioning from deck (naval) to field (aviation) grade.

23. The website www.j-aircraft.org. Amazingly, Japanese sources state that in those flights the fighter escort for this Imperial Japanese Navy unit was provided by an army air force unit, flying a couple of sections of Ki-43 Oscars from the 54th IJAAF Fighter Regiment—a remarkable instance of cooperation between Japanese services not seen anywhere else during World War II.

24. In September 1943 the veteran British battleship *Warspite* and the U.S. cruiser *Savannah* (CL 42) were seriously damaged by FX1400 bombs. At 1,570 kg, the FX1400 was the heaviest aerial weapon ever to hit a U.S. Navy warship.

25. It was intended to stop a Soviet amphibious assault on the Swedish shoreline. The Royal Swedish Air Force planned to use the Rb04, and subsequently the Rbs15, against large surface combatants, such as *Sverdlov*-class cruisers.

26. Thomas C. Hone, Norman Friedman, and Mark D. Mandeles, *Innovation in Carrier Aviation,* Newport Paper 37 (Newport, R.I.: Naval War College Press, 2011), esp. p. 191, available at www.usnwc.edu/press/.

27. James B. Stockdale, *Thoughts of a Philosophical Fighter Pilot* (Stanford, Calif.: Hoover Institution Press, 1995).

28. As supposed by Soviet Navy staff experts, the AGM-84A Harpoon was created mostly for hitting surfaced SSGNs of Project 675 (i.e., what NATO called Echo IIs), which had to surface to launch their antiship missiles. Harpoon is subsonic and has a very complex and effective active radar seeker, an ideal combination against surfaced submarines. A French contemporary missile, the Aerospatiale AM-39 Exocet, intended to hit the surface combatants, has opposite, and deadly, features—supersonic speed and a relatively simple seeker.

29. Aside from missiles, from the beginning the Tu-16 (as well as Tu-95) was considered a potent weapon against U.S. carriers. One

of the most powerful unguided iron bombs in history was created for this task, namely, the nine-thousand-kilogram, high-explosive FAB-9000. Both the Tu-16 and Tu-95 could carry one such bomb.

30. In February 1988, a Pacific Fleet Air Force reconnaissance plane, Tu-16RM-1 side number 10, ditched off Kamchatka owing to engine failure. The aft cockpit crew drowned with the plane, as the tail gunner forgot to open the leaves before the ditching, so they became jammed. The copilot, First Lieutenant Kazimirov, who had safely escaped from the main cockpit's emergency hatch, attempted to save the two enlisted airmen aft. He swam in the icy water to the tail of the submerging plane and tried to break the bullet-proof glass of the aft cockpit by shooting it with his pistol, but in vain, and he too drowned. When a rubber raft with the three remaining crew members from the main cockpit was found by a submarine the next morning, seventeen hours after the ditching, only the plane commander, Captain Efremov, was alive; both navigators had frozen to death.

31. Lt. Gen. Victor N. Sokerin retired as commanding general of the Baltic Fleet Naval Air Force. Previously he had twelve years of service as a Tu-16 pilot and crew commander in the Northern Fleet and later a Naval Air Force staff officer.

32. V. N. Sokerin, e-mail conversation with author, 2009.

33. James Blaker, "Arthur K. Cebrowski: A Retrospective," *Naval War College Review* 59, no. 2 (Spring 2006), p. 133, available at www .usnwc.edu/press/ [emphasis original].

34. Tommy H. Thomason, *Grumman Navy F-111B Swing Wing,* Naval Fighters 41 (Simi Valley, Calif.: Ginter Books, 1998). The quotation is from "Tests & Testimony," *Time,* 22 March 1968. In fairness to the admiral, though, it does seem generally far from a wise decision to merge the two fighter concepts (daylight fighter and all-weather interceptor) in one airplane.

35. Diesel-electric submarines of Whiskey and Kilo classes usually had two Shkval rocket-powered torpedoes armed with nuclear warheads. The Project 685 (NATO Mike class) nuclear-powered attack submarine *Komsomolets,* sunk in 1989 in the Norwegian Sea, had two Shkvals and two 3M-10 Granat (similar to the NATO SS-N-21) cruise missiles, all four nuclear armed. Not less than 75 percent of the overall spending by the Soviet Navy in 1945–92 went to submarine design, building, arming, equipping, training, and maintenance—that is, for submarine-force affairs generally.

36. *Umi Yukaba* was a patriotic Japanese song often sung in World War II by suicide-attack pilots before takeoff: "If I go away to the sea / I shall be a corpse washed up. / If I go away to the mountain, / I shall be a corpse in the grass. / But if I die for the Emperor, / It will not be a regret."

37. Contrary to the U.S. Navy designation, the term "guided missile" in Russian means anti-ship, not antiair, missile.

38. In the author's own experience, ENIGMA-style crypto devices able to send secure messages letter by letter in Morse code automatically were in use in the Russian Navy as late as 1996.

"WINNING" THE PACIFIC WAR

The Masterful Strategy of Commander Minoru Genda

Angelo N. Caravaggio

Criticisms leveled at the Japanese for their "ill conceived" or "poorly planned" attack at Pearl Harbor on 7 December 1941 have failed to consider the true depth of vision and professional intellect of its principal architect, Commander Minoru Genda.[1] Charges of failure to execute follow-on attacks against the harbor facilities, if any such attacks were planned at all, or to exploit the immediate advantages created in the Central Pacific after the attack are commonly made by both academic and professional military scholars. Genda has suffered the brunt of this criticism. But in fact Genda's plans were neither ill conceived nor poorly assembled—they were just not executed as originally envisioned.

The generally understood intent behind the Pearl Harbor attack was to delay the westward advance of the U.S. Pacific Fleet for up to six months, allowing Japan to complete the occupation and consolidation of the area it had designated the Greater East Asian Co-Prosperity Sphere.[2] The attack at Pearl Harbor accomplished this aim. In the overall Japanese plan, the Southern Operation—the army's offensives toward the East Indies and Southeast Asia—was the main military effort. However, for Genda, the Pearl Harbor attack had to be much more than just a tactical strike; it had to be the decisive action of the war, and he conceptualized his operational plans accordingly.[3] A veritable treasure of unexamined transcripts of interviews conducted by the

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historian Gordon Prange reveals the depth of foresight and professional wisdom of Genda's concept of operations.

Between 1946 and 1951 Prange conducted no fewer than fifty-three interviews with Genda and other key Combined Fleet staff planners, especially Commander Yasuji Watanabe, the staff logistics officer, and Captain Kameto Kuroshima, the senior staff officer. The majority of English-language authors researching and writing on the Japanese attack on Pearl Harbor have cited Prange's own *At Dawn We Slept* and documents collected by Prange—affidavits and planning materials —published after his death.[4] Few authors have referenced the original Genda, Watanabe, or Kuroshima interviews.

A detailed review of Prange's interviews with Genda reveals a singular focus on what Genda viewed as the centerpiece for any war in the Pacific between Japan and the United States—that is, Pearl Harbor. Genda's "war winning" strategy rested on concentration of military efforts against the Americans, with an invasion of the Hawaiian Islands as the opening move. Genda realized the military potential inherent in Pearl Harbor. The base and its central geographical position in the Pacific were the key to winning the war in the Pacific. His original concept of operations for attack against Pearl Harbor was designed to deliver the base to the Japanese or, alternatively, deny it to the Americans. A detailed analysis of his original and subsequent plans reveals a depth of professional understanding remarkable for someone of the relatively junior rank of commander as to the strategic context of the war that Japan was about to start. Had his proposals been followed, the initial conditions in which the United States would have been compelled to wage war would have been significantly altered. As it was, however, Genda's plans ran counter to traditional Japanese military strategy and were considered unpalatable by the other members of the Combined Fleet staff. Ultimately, the defeat of Japan was culminated before the foresight and validity of Genda's original vision could be appreciated.

To understand better the strategic relevance of Genda's vision, it is necessary to grasp the larger context of Japanese military planning and decision making. In particular, two issues need to be understood: the unique nature of the military within the government, and the role of the Philippines in Japanese military thinking. Under the Japanese constitution, the civil and military functions of the government were separated, with clearly delineated lines of authority—one through the cabinet to the civil agencies of the government, the other through the service chiefs to military forces. Each was independent of the other and acted in the name of the emperor. In actual practice, however, the military exercised a veto over the civil government, by virtue of the fact that the war and navy ministers could force the resignation of the prime minister and the formation of a new government simply by resigning themselves. No cabinet could exist without

the war and navy ministers.[5] In time of war, moreover, the nation was completely dominated by the military—not only militarily but economically and politically.

The military was divided into two independent entities, the Imperial Japanese Army (IJA) and the Imperial Japanese Navy (IJN). The two services had their own organic air forces and in the interwar years saw the coming conflict from completely different perspectives.[6] Japan envisioned three enemies: China, Russia, and the United States. The first two were viewed as the IJA's problem, while any war with the United States would be fought at sea and therefore would be, for the most part, a matter for the IJN. From the IJA perspective, war began on 7 July 1937, with the sudden expansion of ongoing fighting in China and commitment of a significant portion of the army's resources there. The number of Japanese troops in China rose from 700,000 in 1937 to 850,000 by the end of 1939.[7]

Continuing the war in China and maintaining the gains won there largely underpinned Japanese strategic thinking both politically and militarily. However, by late 1941 the success of German armies in Europe and the weakened states of the Netherlands and Britain presented a perfect opportunity to expel British and Dutch influence from East Asia. The conditions, in fact, were favorable for Japan to construct, having consolidated its sphere of autonomy and security in China, a new order in Greater East Asia under Japanese rule.[8]

Operations aimed at securing that new order beyond China would primarily be the task of the navy, waged against not only the British and Dutch but necessarily the Americans as well, and the Philippines would be strategically critical for their first phase. The Philippines represented a key factor in the concept of the "decisive naval battle" between battleships, which was the centerpiece of IJN doctrine and planning in the interwar period. Supporters of this theory believed that a war with the United States would be decided by one great naval battle. To win it, the IJN had two problems: it had to find a way to lure the U.S. Pacific Fleet into waters close to Japan, where the Japanese planned to fight the battle, and it had to reduce the American advantage in battleships. The capture of the Philippines was viewed as the "bait" necessary to entice the Americans westward. From bases in the Marshalls, Marianas, Carolinas, and other mandated islands, Japanese submarines and aircraft would attack the approaching Pacific Fleet to reduce its strength. When the opposing forces finally met for the decisive engagement, there would be parity, or even a Japanese advantage, in battleships.[9]

The other strategic value of the Philippines Islands was their location between Japan and the coveted resources of the Dutch East Indies. Once the Dutch East Indies were occupied, the bulk of the raw materials needed to sustain the Japanese economy would have to be transported north past the Philippines to Japan.[10] The Japanese faced in this respect an operational dilemma of risk management.

Two options were available:

- Option one: attack and take the Dutch and British territories only, accept the operational risks posed by American forces astride sea lines of communications, and if the Americans engaged militarily, only then attack U.S. assets and territories.

- Option two: take the Philippines at the outset, reducing the operational risk to Japanese sea-lanes, and plan for the war with the United States that this action would bring.

Deciding on the first option would mean that such key American possessions as Wake and Guam could not be attacked at the outset.

On 18 October 1941, Emperor Hirohito directed Prime Minister Hideki Tōjō to conduct a far-reaching and comprehensive policy review of Japan's position from an economic, political, and military perspective. The resulting review consisted of responses to eleven questions posed by the emperor, of which the eighth was the most critical: "Could one limit the war adversaries only to Holland or only to Great Britain and Holland?" Politically the answer was yes, but military reasoning held sway, and the answer given was no. In the end, the Japanese military was unwilling to accept the operational-level risks associated with leaving the Philippines in American hands during its initial operations.[11] The decision was therefore made to take them, for the following purposes, as listed in the Japanese plans:

- To deny to American ground, sea, and air forces the use of the Philippines as an advance base of operations

- To secure the line of communications between the occupied areas in the south and Japan proper

- To acquire intermediate staging areas and supply bases needed to facilitate operations in the southern area.[12]

Given that war with the United States was now inevitable, the Japanese had to design a campaign that would acquire the territories needed to sustain Japan's economy; destroy the American, British, and Dutch ability to project power in the Pacific; and then transport the raw materials of the acquired territories back to the home islands. It is important to note that there was no broad strategic plan to prosecute the war so as to achieve these objectives, coordinating all aspects of the effort and the national resources needed. This reality deterred joint campaign planning. The IJN and IJA prepared their own plans, negotiating with each other only as necessary to execute them. These discussions were limited to specific operations and did not generate a national focus. Since the IJA was the more powerful of the two services, it usually had its way and could veto proposed IJN

plans. When consensus was reached on the methodology of a specific operation, Imperial General Headquarters issued an "agreement," not an operational order.[13] Critically, large-scale amphibious operations could not be conducted without the consent of the IJA, which would be providing the troops.

The planning equation was complicated even further by the fact that the Naval General Staff (NGS) and Admiral Isoroku Yamamoto, commander in chief of the Combined Fleet, had differing views as to the sequencing and priorities of the initial operations.[14] Yamamoto's greatest priority was the destruction of the threat posed by the U.S. Pacific Fleet. He wanted its battleships crippled or destroyed as early as possible, which would then facilitate operations to the south. The NGS, however, focused on Southeast Asia and the southwestern Pacific. It wanted all effort concentrated on the capture of these areas as soon as possible, so that their raw materials could be acquired. In the NGS plans, the Pacific Fleet would be dealt with as needed when it decided to appear.[15]

The problem for Yamamoto was that the NGS strategy did not deal with the major threat posed by the Pacific Fleet, then stationed in Hawaii. The NGS plan, operationally offensive in the south, was operationally defensive in the east against the Americans. It did not include a strike on Pearl Harbor. The NGS strategy was designed to win early in the south but reflected no clear understanding of how to terminate the conflict at that point, with Japanese gains intact. It also had the disadvantage of relinquishing the initiative in the Central Pacific to the United States.

Yamamoto, however, was convinced that the Japanese could not penetrate the southern region successfully without a prior strike against the Pacific Fleet.[16] He and a selected group of naval officers who had visited the United States and witnessed its industrial capacity knew that Japan could not win a protracted war with that nation. They realized that Japan's operational advantage would be at its peak at the very beginning of the war. Its operations, in attacking a decidedly stronger opponent, had to maximize the elements of speed, concentration of force, and surprise, and above all else they had to retain the initiative. Yamamoto concluded that he had to do his best to decide the fate of the war at its outset.[17] He believed that this could be achieved only if Japan attacked Pearl Harbor on the very first day of the war and destroyed the Pacific Fleet there. The task of developing the plan to attack Pearl Harbor was eventually assigned to Commander Minoru Genda.

THE "MAD" MINORU GENDA
Gordon Prange (writing in 1947) describes Genda as follows:

> He was quite small in stature with a peculiar Filipine [*sic*] expression and manner in his gesture and conversation. I noticed too that he had a pair of sharp penetrating

eyes and a quick and agile mind; in fact he impressed me as having somewhat of a
trigger brain; he thinks much more quickly and more to the point than the average
Japanese. After he warmed up to the subject [during his interviews with Prange] I
found that his whole attitude was sympathetic. It is my honest conviction that he was
truthful in everything he said.

Prange adds that Genda seemed a shrewd observer, a keen judge of men and of
situations, and the possessor of more penetration and liberalness of thought than
one would expect of a man of the Japanese military caste of that era.[18]

Genda graduated from the Cadet School in 1924 at the top of his class, listing
mathematics, strategy, and tactics as his favorite subjects. He had a reputation for
having a progressive mind and being full of ideas, traits that placed him in stark
contrast to his typically conservative classmates. In December 1928 he began a
year of flight training at the Kasumigaura Air Corps; subsequently he became a
member of the naval fighter corps and received numerous assignments to the
Yokosuka Air Corps and the carriers *Akagi* and *Ryūjō*.[19]

In 1935, Genda was selected to attend the Naval War College and in 1936
submitted a report in response to a call for papers on the theme of a suitable
armament of the Japanese navy for an encounter with the United States. Genda
proposed that the navy focus on airpower—carriers and land-based bombers
and fighters should become the new capital elements of the fleet. He advocated
directing the navy's expansion efforts toward the enlargement of the carrier, and
also submarine forces, essentially making battleships irrelevant, by giving op-
posing battle fleets "nothing to shoot at." In fact, his proposal involved scrapping
battleships. Genda felt that Japan could achieve control of the sea only if it went
on the offensive and could achieve victory only if it had air superiority over any
potential enemy fleet or base.[20] Genda would later claim that the students and
instructors could not defeat his theories but still called him "mad." Despite the
obvious unpopularity of his academic writings, however, Genda graduated sec-
ond in his class, in July 1937.[21]

The idea that the main elements of the Japanese fleet should be aircraft car-
riers protected by lighter ships was suggested almost simultaneously by two
other sources within the IJN as well: Captain Takijiro Onishi (commander of the
Yokosuka Naval Air Force) and several pilots assigned to the Combined Fleet.
While an airpower focus was roundly dismissed by the mainstream IJN, the
concept motivated the creation of an Airpower Research Committee to study "air
effectiveness" for naval operations. In particular, its members were to investigate
the effectiveness of air attacks against warships with bombs and torpedoes. The
data obtained from experiments conducted by the committee were later used in
conceptualizing the attack against Pearl Harbor.[22]

After graduation, Genda was sent to China on the staff of the 2nd Combined Fleet Air Corps. The air corps employed thirty-six fighters, thirty-six dive-bombers, and thirty-six horizontal bombers in operations throughout China. During his short tenure in that theater (July–December 1937), the Chinese were able to challenge Japanese air superiority. Genda experimented with numerous ways of using naval fighters to support air operations, in particular as escorts for long-range bombing attacks. Genda is credited with developing the concept of advanced refueling bases close to Chinese lines. Such bases extended the shorter combat radius of naval fighters, allowing them to refuel on the way either to or back from their targets.[23]

The lessons learned from the operations over China fundamentally shaped Genda's thinking about air warfare. The Japanese were experimenting with the projection of naval airpower ashore, utilizing long-range strategic bombing, fighter escort, and strafing as deliberate missions.[24] The fundamental rule of any air battle, in turn, was to gain immediate control of the local air by eliminating the defensive activity of enemy fighter planes.[25] China convinced Genda that fighters were a more powerful factor than he had previously realized and that they were most effective used offensively, to control the air war: "The most effective and wise way of making use of fighter units was to use them positively in seeking a decisive engagement with enemy fighters in the air. To this end, the use of fighters on other missions such as escorting bombers or surface forces should be limited as much as permissible."[26] Genda's conclusions reinforced the propensity of Japanese fighter pilots to seek duels with other fighters at the expense of protecting bombers.

The second important lesson that Genda learned from China concerned mass: "Facts evidently proved that piecemeal attacks could not inflict destructive damage; in order to launch effective bombings, a destructive blow should be given in a short while [i.e., over a short period of time], using a great number of planes at one time." Genda's China experience reinforced his belief that without a sizable air fleet, both carrier- and land-based, Japan could not engage in modern warfare.[27]

In December 1938 Genda was appointed as the assistant naval attaché at the Japanese embassy in London. He arrived there in March 1939 and remained until September 1940. Genda's mission was to gather as much information as he could on British air forces. The outbreak of war in Europe and the air combat that developed allowed Genda to crystallize his thoughts on airpower. Once again he witnessed the impact of mass, whereby "the Nazis' use of air forces en masse, in one wave or in successive waves, evidently proved very effective in spite of their inferior abilities."[28]

Genda was convinced by all this that air superiority was the key to success in any campaign, land or sea, and that air superiority was a function of mass and possession of superior fighter aircraft.[29] (At this point, Genda was unaware of the existence and performance capabilities of the Japanese Zero fighter.) He feared that Japanese naval authorities would draw the wrong conclusions from the air war in Europe, since Japanese naval officers kept pointing out that even Germany's huge air fleets were unable to defeat or damage the ships of the Royal Navy. Genda countered with the fact that German pilots were trained to participate in land-centric campaigns and not over the seas.[30] On his return to Japan, Genda began a campaign to change thinking about aircraft design. In particular, Japanese naval aircraft were not protected by armor; their fuel tanks and pilots were exposed. He pointed out that the German planes protected both and argued that these changes were necessary for all Japanese planes.[31]

In November 1940 Genda was posted on board the aircraft carrier *Kaga* as the air staff officer of the 1st Carrier Division and tasked with preparing a new training program for carrier warfare. His experiences in both China and the United Kingdom had convinced Genda that to attack an enemy effectively, airpower had to be concentrated. If carriers were scattered—as they currently were, in different fleets—it would be too difficult to concentrate combat power on one objective. The carriers had to be grouped together, and they had to maneuver as a unit. He reasoned that a massed formation would enhance both the defensive and offensive natures of carrier warfare. Concentration would allow the carriers to pool fighter resources for their own defense, making remaining fighters available to be used offensively in support of torpedo and bombing planes.

The new concept of concentrating carriers was accepted by the commander of the Tateyama Naval Air Detachment, Rear Admiral Michitaro Totsuka, but what "concentration" meant with respect to numbers and tactical dispositions of carriers needed to be determined. The concept was tested with the carriers *Kaga, Hiryū,* and *Sōryū* of the 1st and 2nd Air Squadrons.[32] *Akagi* had begun an overhaul in November 1940 and was unavailable. The formal realization of carrier concentration came with the formation of the 1st Air Fleet, composed of the 1st *(Akagi, Kaga),* 2nd *(Hiryū, Sōryū),* and 3rd (light carriers *Zuihō, Hōshō*) Carrier Divisions, under the command of Vice Admiral Chūichi Nagumo, on 10 April 1941.[33]

In February 1941, Genda was called to a meeting with Takijiro Onishi, now a rear admiral and chief of staff of the Eleventh Air Fleet. Besides enjoying Yamamoto's trust and confidence, Onishi was rated as one of Japan's few genuine "air admirals." Though primarily concerned at the time with land-based aviation, Onishi was a vigorous advocate of carrier warfare.[34] Yamamoto had asked

Onishi to begin a study on the possibility of using the air squadrons of the 1st and 2nd Carrier Divisions for a surprise attack against the American fleet at Pearl Harbor.

Onishi showed Genda a three-page letter that Yamamoto had sent him. In it Yamamoto proposed the use of torpedo bombers on a one-way mission. The torpedo bombers were to be launched five hundred miles from Pearl Harbor, a distance that was beyond their normal combat radius. Once they were launched, the carriers would return to Japan. The torpedo planes would complete the attack and then fly back in the direction of the task force and ditch at sea; destroyers would pick up the aircrews. Yamamoto wanted to target only battleships. He appreciated the importance of destroying aircraft carriers but believed that the psychological effect on the American people of destroying all the American battleships would be greater than that of the destruction of carriers.[35]

Genda returned to *Kaga* and worked on a plan of his own for about two weeks. Genda supported Yamamoto's concept of a surprise attack but bitterly opposed the proposed tactics. A one-way attack would not allow for follow-on attacks, which were necessary to achieve decisive effect. Using only torpedo bombers made the attack one-dimensional, which meant that if conditions were not perfect —if, for example, the weather or visibility were poor or the Americans were alerted—the effects would be minimized. Genda wanted a coordinated attack, one that combined torpedo, dive-, and horizontal bombers, protected by fighters. His approach provided for multiple methods of attack and could deal with almost any situation, including, if necessary, the aircraft having to fight their way in to the target. A coordinated attack had greater flexibility and a higher probability of success. Genda opposed Yamamoto's plan also because he viewed it as a terrible waste of aircraft and probably of highly trained pilots as well (the proposed rescues at sea being highly problematic), which Japan could not easily replace.[36]

The basic elements of Genda's proposed plan were as follows:

- The main objectives of the attack should be the American carriers (because he felt that they would be the real capital ships of the coming war) and land-based planes.

- The blow had to be strong enough to eliminate the American fleet as a threat for at least six months—the time considered necessary to occupy the Dutch East Indies.

- All of Japan's carrier strength should be used, without exception. Torpedo bombers would deliver the main attack, but because it was not known whether torpedoes could be successfully launched in the shallow waters of Pearl Harbor, shorter-range dive-bombers also had to be employed.

- The range of Japanese carriers was not enough to permit a trip to Pearl Harbor and back; therefore Japan had to study and perfect at-sea replenishment in the harsh conditions expected of the North Pacific.

- The operation had to be a complete surprise.

Genda concluded that the operation would be difficult but not impossible.[37]

Genda briefed his proposal to Onishi, and the two officers discussed it for about two hours. Genda argued that it was desirable to land forces on Oahu immediately after the air raid, thus making the attack decisive by denying the Americans the means to project power across the Central Pacific. Onishi dismissed the idea, holding that Japan's power was not sufficient to permit simultaneous operations in the Philippines, the Indies, and Oahu.[38]

Onishi submitted Genda's draft unedited to Yamamoto, adding his own comments and thoughts separately, in March 1941. Onishi's ten-page (according Genda in postwar interviews) report does not survive, and it is not clear whether —though the paper included all of Genda's recommendations and a few of Onishi's own—the idea of invading Oahu was part of it. Onishi wanted to target U.S. cruisers, in order to unbalance the American fleet. Also, he favored horizontal bombing over dive-bombing, because bombs dropped by dive-bombing did not have sufficient velocity to penetrate the armor of battleships, and horizontal bombing would minimize Japanese casualties.[39]

While the concept of an attack against Pearl Harbor remained in the forefronts of the minds of those who were aware of what Yamamoto was thinking, formal, detailed planning for the attack did not happen until the fall of 1941. In the interim, the 1st Air Fleet concentrated on improving the tactical dispositions and maneuvering of the carriers and the bombing accuracy and technique of aircrews. Yamamoto eventually accepted the idea of repeated attacks to achieve a decisive result.[40] That having been decided, Yamamoto did not interfere with the planning effort. He now focused on convincing the NGS to allow him to execute the operation.[41]

THE JAPANESE PLAN FOR WAR

Commander Yasuji Watanabe, a trusted member of Yamamoto's Combined Fleet staff, later described the conceptual foundation of the opening Japanese operations in this way:

> In Japanese tactics we are told when we have two enemies, one in front and one in the back, first we must cut in front by sword. Only cut and not kill but make it hard. Then we attack the back enemy and kill him. Then we come back to the front enemy and kill him. This time we took that tactic, having no aim to capture Pearl Harbor but just to cripple it. We might have returned to capture later.[42]

The basic Japanese plan for war, placed into effect in December 1941, consisted of three phases:

Phase One: The seizure of the Southern Areas; the attack on the United States Fleet in Hawaii, and the seizure of strategic areas and positions for the establishment of a perimeter for the defense of the Southern Resources Area and the Japanese Mainland. The area to be seized was that within the line which joins the Kuriles, Marshalls (including Wake), Bismarcks, Timor, Java, Sumatra, Malaya, and Burma.

Phase Two: Consolidation and strengthening of the defensive perimeter, and

Phase Three: The interception and destruction of any attacking strength, which might threaten the defensive perimeter or the vital areas within the perimeter. Concurrently with intercept operations the activation of plans to destroy the United States will to fight.

Through these three phases, the Japanese hoped to attain their strategic goal of economic self-sufficiency.[43]

The NGS's existing orders to Yamamoto contained two main tasks: one, the destruction of the enemy fleet or fleets; and two, coordination with the army in capturing and gaining control of the southern area. The methods to be employed in the destruction of the enemy fleet were up to Yamamoto, but he could not activate any plan without the approval of the NGS. Regarding the second task, the duty of the navy was to support the army's efforts with both its fleet and its land-based air force.[44]

Japanese military planners were now faced with moving forces rapidly over long distances to acquire the key strategic territories of the Co-Prosperity Sphere while defeating any Allied forces present. Gains would have to be defended against the inevitable Allied counterattacks. Having limited warships, transports, and ground forces for the tasks envisioned, the planners had to use key forces for multiple tasks.[45] This necessity resulted in the decision to sequence the elements of Phase One. Success was dependent on Japan's ability to seize and maintain the initiative. Maximum use would have to be made of airpower to prepare and shape the battle space. Phase One was to be completed in 150 days.

The following critical assumptions guided Japanese planning and decision making leading up to the outbreak of war:

- That the threat of Russia on the Manchurian flank had been neutralized by decisive German victories in Europe.

- That Great Britain was in an irretrievably defensive position.

- That the forces that the United States and its allies could immediately deploy in the Pacific, particularly in the air, were insufficient to prevent Japan from occupying within three or four months the entire Co-Prosperity Sphere.

- That China—the Burma Road having been severed—would be isolated and forced to negotiate.

- That the United States, committed to aiding Great Britain and weakened by the attack on Pearl Harbor, would be unable to mobilize sufficient strength to go on the offensive in the Pacific for from eighteen months to two years. During this time, the perimeter could be fortified and the required forward airfields and bases established. The perimeter would be backed by a mobile carrier striking force based on Truk.

- That Japan would speedily extract in the captured territories and ship to home islands for processing essential metals to sustain and strengthen its industrial and military machine.

- That the weakness of the United States as a democracy would make it impossible for it to sustain any all-out offensive action in the face of the losses that would be imposed by fanatically resisting Japanese soldiers, sailors, and airmen, and the elimination of its allies. The United States would therefore compromise and allow Japan to retain a substantial portion of its initial territorial gains.[46]

Unfortunately for the Japanese, the fifth and seventh assumptions were to prove false.

On 5 November the following operational objectives were issued:

a. In the Eastern Pacific, the American fleet would be destroyed and her supply route and line of operation to the Orient severed,

b. In the Western Pacific, the campaign in Malaya shall be conducted to sever the British line of operation and supply to the Orient as well as the Burma Route,

c. The enemy forces in the Orient shall be destroyed, their strategic bases captured, and the important areas endowed with natural resources shall be occupied,

d. Strategically important points shall be captured, expanded in area and strengthened in defensive forces in order to prepare for a prolonged war,

e. Enemy invading forces shall be intercepted and annihilated, and

f. Successful operations shall be exploited to crush the enemy's will to fight.[47]

The one significant constraint imposed was that Japanese operations had to begin before the British and Americans could supplement their forces in the theater and thereby alter the balance of power.

Strategic success would be achieved, because Japan would escalate the material and moral costs of war beyond what the Western powers, America in particular, would be willing to pay. The strategy was predicated on American

rationality—that is, the Americans would perform a cost-benefit analysis and come to terms with the realities created by Japanese success.[48]

The conventional narrative on the Pacific War has it that Japan never intended to invade Hawaii. This view asserts that the Japanese leadership felt Hawaii was too difficult to capture and retain and that it was in any case outside the desired limits of the Greater East Asia Co-Prosperity Sphere.[49] However, we now know that Hawaii was in fact explicitly included within the sphere in both public and classified wartime documents and was the focus of Genda's thinking from the beginning.[50]

Genda understood that Pearl Harbor was the headquarters of the Pacific Fleet, a crucial logistics and repair facility, a vital intelligence center, and an ideal springboard for any counteroffensive against Japan. Hawaii was also the anchor for air and maritime communications between the United States and the southwestern Pacific. From the moment Genda began preparing his draft, he favored a full-scale landing of Japanese troops on Oahu. "We should follow up this attack on Hawaii with a landing," he said. "If Hawaii is occupied, America will lose her largest and best advance base and, furthermore, our command of future operations will be very good." American fighting forces on Hawaii would have to retire to the West Coast, and Japan would dominate the Central Pacific.[51] Genda's conceptualized plan, that is, took Yamamoto's intent one step farther—to take Pearl Harbor away from the Americans and thereby eliminate their ability to project power from the Central Pacific. Once in Japanese hands, the Hawaiian Islands could be used militarily to threaten the continental United States and, politically, as a bargaining chip in negotiations to end the war.[52] The key to Genda's vision was not what Japan would gain by acquiring the islands but what the United States would lose.

It is in this plan that the true nature of Genda's operational-level thinking is manifest. Genda believed that without seizing and holding Oahu, Japan could not hope to win the war. Oahu had to be taken at the outset of the conflict, while surprise and initiative still worked in Japan's favor. Once it had been occupied, conditions would be favorable for subsequent operations in the south, and Japan would have time to figure out how to maintain and resupply the islands. Genda believed that Hawaii, not the Philippines, should have been Japan's major military objective at the outset. Where Yamamoto saw a delaying action, Genda saw a knockout punch—the annihilation of the enemy's operational center of gravity with one decisive, joint operation.[53]

Assuming that the initial air strikes were successful and that the Japanese had air superiority and given intelligence estimates of approximately two American divisions on Oahu, Genda believed ten to fifteen thousand well equipped troops would suffice for its capture.[54] Genda realized the risks involved in moving a large

task force across the North Pacific to attack Oahu, but he felt that even if (as the Japanese expected) a portion of the force was destroyed, the loss of shipping and troops would not materially impact operations in the south.[55]

Predictably, so innovative a plan, coming originally from a mere commander (though possibly over the signature of a rear admiral), did not survive contact with the senior planners of the Combined Fleet staff, particularly at a time when the concept of a carrier air attack, backed by Yamamoto himself, was itself experiencing stiff opposition. But during naval war games to test the planned Phase One operations in September 1941, the idea of invading Oahu resurfaced. In preparation for the event, Commander Watanabe conducted a detailed study of a possible invasion of Oahu. He estimated that a successful invasion would require at least two Japanese divisions, about thirty thousand men. Transporting them, with their equipment and supplies, would require eighty transports and escort vessels, including thirty-two destroyers, eight cruisers, four battleships, two aircraft carriers, six to eight submarines for reconnaissance, and ten tankers. These would be in addition to the carrier strike force.[56]

Watanabe laid out two landing sites: one on the northwest coast on both sides of Haleiwa, the other in the area of Kaneohe Bay. The southern coast was best suited to an invasion, but it was also the most heavily defended area of Oahu. The west coast was eliminated, because the U.S. Navy had held invasion maneuvers off the west coast a year before, and the Americans were likely well prepared to defend that part of the island.[57]

The two landings would happen simultaneously at midnight of 7/8 December. Half a division would land at Haleiwa, to take Schofield Barracks. The objectives of this attack were not only to take the barracks but to draw American forces northward, by giving the impression that it was the main effort. The actual main attack, however, was planned for the east coast, at Kaneohe Bay, with one and a half divisions. Two-thirds of this force would occupy that, the remainder the region below Laie. The objective was to cross the Koolau Range, using horses, and then descend on Pearl Harbor, cutting off any retreat to the mountains of Oahu. The Japanese knew from intelligence that the Koolau mountains were not fortified and in fact were open to the public. Given complete air superiority, Watanabe estimated, it would take from two to four weeks to capture the island.[58]

Watanabe tried to discuss the study with Captain Kuroshima but the latter was not interested, considering an invasion infeasible and to be going against the concept of operations for Phase One. After the war, Kuroshima would declare that the "biggest mistake" of his life was this refusal to consider invasion of Oahu after the carrier attack.[59] Genda's and Watanabe's superiors, for their part, always considered the idea in the context of the invasions of the Philippines and Malaya, also to be accomplished at the outset. Considered accordingly, an invasion of

Oahu was easily dismissible from a resource perspective. Genda himself, in contrast, viewed the invasion as either instead of or before the Philippine operation, with the intent of denying American ground, sea, and air forces the use of the Hawaiian Islands as an advance base.

Regardless, any invasion of Oahu would have needed the support of the army, which was firmly focused on China and willing to provide only the smallest number of divisions necessary to acquire the territories identified in Phase One. In fact, the IJA planned to commit only ten of its fifty-one divisions and four of its fifty-nine brigades to the Southern Army for these operations.[60] Notably, however, and reflecting the important role envisioned for airpower, the IJA allotted seventy of its 151 air squadrons to support the Southern Operation.

The mistrust that existed between the two services is evident from the fact that the Combined Fleet never approached the IJA to discuss a Hawaiian invasion option. The Combined Fleet was so concerned with the secrecy of the Pearl Harbor carrier attack that it did not want to divulge the plan to the army. The Combined Fleet's fear was based on the IJA's strong influence over governmental decision making—if the IJA objected to the attack, it could easily force its cancelation. Watanabe lamented that "once they [IJA] rejected something, nothing could be carried out."[61]

For all these reasons, and despite repeated attempts by Genda to drive home the importance of taking the islands, the idea of invading Oahu as part of the initial attack was dead. Knowing that there was no stomach for invading Oahu as he had wanted, Genda moved to the next best course of action available, which was to design a plan that would deny Pearl Harbor to the Americans, through the destruction of the base and its facilities. "In my opinion, Japan had to neutralize American bases in the Pacific if she was to carry on the war successfully."[62] Genda's modified plan involved repeated attacks against the infrastructure of Pearl Harbor and the Pacific Fleet at its moorings, and a possible fleet engagement against any American warships found outside the harbor. A significant problem for Genda was that Vice Admiral Nagumo, who commanded the 1st Air Fleet, had little faith in or understanding of naval airpower or the potential of the air arm at his disposal.[63]

Nagumo was aligned with the IJN's "fleet faction." These officers—politically right-wing, pro-Axis, virulently anti-British and anti-American—were ardent expansionists and favored the rapid buildup of Japan's naval strength. They believed in the supremacy of the battleship in naval warfare, were deeply schooled in the theories of Alfred Thayer Mahan, and were committed to the vision of decisive battle by surface fleets.[64] Since 1934 they had purged the Japanese naval hierarchy and now held almost all the key command and institutional positions, particularly in the NGS.

The conventional explanation of the decision to give Nagumo command of the 1st Air Fleet is that it came down to seniority, not expertise. Nagumo was a surface fleet officer and specialist in torpedo attack. Even his longtime friend Admiral Tsukahara Nishizo, later commander in chief of the 11th Air Fleet, would recall, "He [Nagumo] was wholly unfitted by background, training, experience, and interest for a major role in Japan's naval air arm."[65] In fact, the feeling of many in the carrier community, including key members of the Combined Fleet staff, was that Nagumo's background and personality made him completely unsuitable as the commander of the Japanese carriers. Nagumo's appointment, however, was made by the NGS, not the Combined Fleet. Yamamoto's choice was Vice Admiral Jisaburō Ozawa, but at this point Yamamoto did not have a strong enough case to induce the NGS to remove Nagumo.

The Pearl Harbor portion of the Combined Fleet plan met stiff opposition from all quarters, including the NGS, Nagumo, and Nagumo's chief of staff, Rear Admiral Ryūnosuke Kusaka. They viewed the plan as too risky, as beyond the technical capability of the IJN (primarily because of the need for at-sea refueling), and as denying carrier airpower to the vital Philippines operation. Genda realized that there were significant tactical issues to be resolved but felt that they were not insurmountable.[66] It would be early November, however, before the attack was finally approved at the joint and thus national level.

The IJN held a series of war games from 5 to 17 September 1941 to test Phase One of its operational plan. Two days were set aside for a separate and secret test of the proposed outline of the Pearl Harbor plan. Genda had yet to complete any detailed planning, but at this point the plan used all six "fleet carriers"—that is, *Hiryū, Sōryū, Akagi, Kaga, Shōkaku,* and *Zuikaku*. The Pearl Harbor game suggested that the attack was feasible but involved significant risk and would very likely result in the loss of Japanese carriers.[67] Ultimately, however, these results were overshadowed by a greater operational concern raised by the main war-game series—air superiority over the Philippines.

At the conclusion of the games, 11th Air Fleet representatives raised serious concerns over their ability to supply sufficient strength, especially fighters, for the Southern Operation. Air superiority was in jeopardy, because the distances between the Philippine targets and Japanese bases were beyond the combat radius of the Zero fighter.[68] On 24 September, senior officers of the Combined Fleet, 1st Air Fleet, and NGS met to discuss this problem. The 1st Air Fleet chief of staff, Kusaka, and senior members of the NGS spoke out against the Pearl Harbor plan, arguing that naval strength assigned to the Southern Operation was insufficient and that all air resources, including the 1st Air Fleet, should be concentrated on that.[69] Admiral Onishi, formerly the conduit for the Pearl Harbor attack concept, now vehemently opposed it. He too argued that the carriers were needed by the

Southern Operation. The NGS subsequently directed that fleet carriers from the 1st Air Fleet be made available to support the southern attacks.

It is important at this point to take a quick step backward in time. On 19 August 1941, Genda met with the senior staff officer of the 11th Air Fleet, Captain Chihaya Takahashi, to discuss the overall strategy for air operations, both Pearl Harbor and the Southern Operation.[70] The IJA and IJN agreed that the major role in the Philippine air campaign was the responsibility of the IJN, because of the greater combat range of naval aircraft. Army fighters had been designed to fight on the mainland of China and had a nominal combat radius of three hundred miles. Army bombers, carrying a normal bomb load, could not make the round trip between southern Taiwanese bases and Lingayen Gulf, the principal landing point on Luzon.[71] Consequently, it had been agreed between the two services that IJA planes would be responsible for targets north of the sixteenth parallel (which crosses Luzon north of Manila), while IJN air forces would take care of targets south of that line. The major American air strength, some 208 fighters and bombers, was stationed below that line and therefore the responsibility of the IJN.[72]

The Philippine invasion air plan involved virtually every Zero fighter the navy had except for those of the 1st Air Fleet. The Zero possessed a combat radius in excess of 420 miles, but there were serious doubts that it could support attacks on targets in the Manila area, 550 miles from Japanese bases on Taiwan. Navy planners now found themselves confronted with an urgent operational problem, for which two possible solutions presented themselves. Either the fleet aircraft carriers had to provide the necessary fighter cover, the more likely option, or means would have to be found to increase the Zero's range, which seemed improbable.[73]

Either way, fighter cover for the bombers was imperative, if Pearl Harbor was to be attacked on the first day of the war. The Philippine air attack had to happen in daylight, and there was a five-and-a-half-hour time difference between there and Pearl Harbor. Consequently, the Japanese expected that Philippine-American defenses would be ready for any Japanese attack on 8 December.

The conflict over the simultaneous requirements for air superiority over Pearl Harbor and the Philippines came to a head in October.[74] During the final war games held on 4 and 5 October, the NGS directed that the fleet carriers be split, with the 2nd Carrier Division *(Hiryū* and *Sōryū),* plus *Akagi,* supporting the Philippine invasion and the remaining three carriers attacking Pearl Harbor. The NGS wanted more airpower for the Philippine attack and held that it had priority. The results of the war games indicated, however, that three carriers could not generate enough combat airpower to achieve the desired results at Pearl Harbor. If the Pearl Harbor attack were to be forced to use only three carriers, Genda recommended that it be scrapped.[75]

Repeated attempts by the Combined Fleet to have all six carriers reassigned to the Pearl Harbor attack failed, until on 17 October Yamamoto sent Captain Kuroshima to NGS headquarters in Tokyo to convey the message that if the Pearl Harbor plan were not approved with six carriers, Yamamoto and his entire staff would resign. On 22 October, Rear Admiral Matome Ugaki, Yamamoto's chief of staff, recorded that Kuroshima had returned with the plan approved as the Combined Fleet wanted it.[76] Most narratives have taken Yamamoto's threat of resignation as the major factor in the decision of Admiral Osami Nagano, chief of the Imperial Japanese Navy General Staff, to approve, at the navy level, the Pearl Harbor plan with six carriers.

But if taking the carriers of the 2nd Carrier Division away from the Philippine operation solved the Pearl Harbor problem, it did not resolve what was in the minds of the NGS the more critical operational problem: the need to attain and maintain air superiority over the Philippines. It is not reasonable to infer that Admiral Nagano would have knowingly placed his top priority, the Philippine operation, in jeopardy by removing the carrier airpower that had been regarded as vital for supporting its initial attacks. We must therefore look elsewhere to determine why Nagano changed his mind—and why, therefore, Genda's plan was actually carried out.

The operational requirement on 8 December was fifteen minutes of combat time for Zeros over Clark Airfield, the main American airfield in the Philippines. By mid-October, experimentation by the 11th Air Fleet had achieved a combat radius of five hundred miles for its Zeros without any modification to the plane's engine or equipment. This was accomplished by reducing cruising speed, adjusting propeller pitch, and setting the fuel mixture as lean as possible. Pilot skill would be counted on to deliver the remaining fifty miles to the target. Plans were made for the occupation of Batan Island, 125 miles north of Luzon, on the morning of 8 December so that the Zeros could make an emergency fueling stop there on the return trip if necessary.

The Zero was now capable of providing the requisite air cover for the initial attacks from Taiwan.[77] This development is more compelling than Yamamoto's threat of resignation as a reason why Nagano changed his mind. The Japanese could now simultaneously commit the six fleet carriers to the Pearl Harbor operation and provide the required Zero cover over the Philippines.

On 29 October, two officers of the NGS—Captain Sadatoshi Tomioka and Commander Yugi Yamamoto, of the Operations Section—visited Admiral Yamamoto on board the battleship *Nagato*. They brought the general war instructions of the NGS and the relevant "agreement" between the navy and the army. The attack on Pearl Harbor was not part of this document. On 3 November, the staff of the Combined Fleet flew to Tokyo to put the finishing touches on

Combined Fleet Order No. 1. There, on 3 November, Yamamoto talked to Nagano; the final decision to allow the attack on Pearl Harbor was made on that day.[78]

The evolution of the detailed Pearl Harbor attack plan needs to be clarified. Until the end of September the plan existed as a conceptual attack that began with a two-wave integrated assault using dive-bombers, torpedo bombers, horizontal bombers, and fighters. The main targets were to be the airfields, carriers, and battleships. Little detail existed beyond that. Commander Mitsuo Fuchida was told of the plan and target on 1 October. Genda and Fuchida began putting details to the attack during October. Their plan involved all six fleet carriers, but as noted above, this was not a foregone conclusion.

On 2 November, Nagumo informed the senior commanders of the 1st Air Fleet of the intent to attack Hawaii and had Fuchida and Genda brief the "general plan."[79] The general concept was tested by the 1st and 2nd Carrier Divisions during Combined Fleet maneuvers on 3 and 5 November. Lessons learned from the attacking formations and observations from Genda, Fuchida, and the Combined Fleet staff were then used to refine the plan. There were many technical details that had yet to be resolved. Chief among these was the fact that the torpedoes were still running too deep to be effective in the shallow waters of Pearl Harbor.

The final details were hammered out at Hitokappu Bay just prior to departure. Genda conceptualized the plan (answering the "who, what, and why" questions), identified and worked to resolve the technical deficiencies in torpedoes and bombs, and organized the training along functional lines to facilitate the attack. The details of the "how" portion of the attack for each aircraft type were left to the respective flight commanders. Lieutenant Commander Shigeharu Murata worked out the torpedo attack plan, Lieutenant Commanders Takashige Egusa and Kakuichi Takahasi the dive-bombing attacks, and Lieutenant Commanders Shigeru Itaya and Saburo Shindo the fighter attack plan. Fuchida and Lieutenant Commander Shigekazu Shimazaki worked out the horizontal-bombing plan.[80] These inputs were then integrated by Genda to form the finalized plan.[81] The final attack plan was briefed to all aircrews at Hitokappu Bay on 23 November. The 1st Air Fleet departed for Pearl Harbor at six o'clock in the morning of 26 November.

THE ATTACK AND ITS IMMEDIATE SEQUEL

Nagumo, in command of the 1st Air Fleet, had opposed the attack on Pearl Harbor from the very beginning and was not comfortable with his responsibility in executing it. He was being ordered to carry out a plan that he did not believe in. Japanese naval doctrine, however, allowed considerable latitude to on-scene commanders to modify plans as they saw fit; Nagumo, unbeknownst to anyone on the Combined Fleet staff, decided even before leaving Japan that he would execute

the plan to the minimum extent possible, making the American battleships the primary targets. Nagumo was unprepared to go beyond his doctrinal comfort zone to make the conceptual leap that Genda's plan envisioned.

Nagumo's personal and professional inclinations convinced him that his job was to inflict enough damage on the American battleships to make them unable to interfere with Japanese operations in the south. Genda, the visionary and air-power advocate, had designed the attack to eliminate the base at Pearl Harbor and thereby deny the Americans the use of the base and its inherent ability to support the projection of power across the Central Pacific. Genda's focus comprised the base and aircraft carriers. The planner and the executor were driving toward different ends. Unfortunately for Genda and ultimately the Japanese, Nagumo, as the tactical commander, would decide what conditions or results defined success.

The preamble to Carrier Striking Task Force Operations Order No. 3, issued on 23 November 1941, includes the following statement:

> Immediately after the return of the first and second attack units [the "waves" constituting the first attack], preparations for the next attack will be completed. At this time, carrier attack planes capable of carrying torpedoes will be armed with such as long as the supply lasts. If the destruction of enemy land-based air strength progresses favorably, repeated attacks will be made immediately and thus decisive results will be achieved.[82]

This order, over Nagumo's signature, was probably written by Genda and therefore congruent with Genda's concept of operations for the attack. Most importantly, it conveys the expectation of repeated attacks. The contradiction between what Nagumo issued as his intention in this order and his personal conviction to launch only the first attack is evident and has caused confusion.

The order was issued while the 1st Air Fleet was still in Japanese waters. This means that the Combined Fleet would have been aware of, and approved of, its contents. It is quite possible that Nagumo was content to make it appear that he intended to act aggressively in executing his orders until he left the home islands and the scrutiny of the Combined Fleet. Rear Admiral Ugaki had chastised both Nagumo and Kusaka for their lack of support for the Pearl Harbor plan and had declared that if they "were not prepared yet to advance in the face of death and gain results two or three times as great as the cost by jumping into the jaws of death with his [sic] men," they both should resign.[83] Once the task force was sequestered in the Kuriles, at Hitokappu Bay, Nagumo made it known to Genda that he would launch only the first attack.[84]

En route to Pearl Harbor Genda tried three times to persuade Nagumo that more than one attack would be needed. On the day of the attack, when Commander Mitsuo Fuchida, leader of the strike, landed on *Akagi* after the first two

waves had returned and reported two battleships sunk and four battleships and four cruisers severely damaged, Nagumo determined that he had accomplished his task and decided to retire, leaving the base and its vital infrastructure intact.[85] The missing carriers would have to wait for another time.

Conceptually, Genda had designed the first two waves to achieve two aims: to gain air superiority over Oahu and to deny the Americans the ability to hit back at the Japanese task force. For these purposes, carrier-based and land-based air forces were the priority targets, then carriers, battleships, cruisers, etc., in descending order. Over half of the attacking aircraft in each wave were committed to the air-superiority task, as providing combat air patrol or attacking airfields.[86] The war diary of the 5th Carrier Division *(Shōkaku* and *Zuikaku)* reported, "The division's air force attacked enemy air bases on Oahu Island, destroying most of the enemy air forces and hangars. Thus enemy fighter interception and counterattacks upon our force was crushed."[87]

Genda's plan envisioned, air superiority having been established and the Americans denied the means to strike back, follow-on attacks to deny the use of Pearl Harbor as an operating base. Their targets were the naval installations first, then the remaining ships (Genda did not specify the oil- or fuel-storage tanks as specific targets). Genda felt that the potential reward of the follow-on attacks was worthwhile even if they cost another hundred planes.[88]

In the event, the extent of the damage that the two attack waves had inflicted on the U.S. air forces in Hawaii would not be known for a number of days.[89] The Japanese battle-damage assessment listed sixteen hangars and 222 parked airplanes set on fire, and fourteen planes shot down, with a total of 450 airplanes on fire.[90] The Japanese after-action study of the Pearl Harbor operation concluded that 265 planes had been completely destroyed or shot down.[91] Before the attack the United States had had over four hundred planes of all types on Oahu, including twelve B-17 heavy bombers and over a hundred P-40 fighters. Immediately after the attack it could count only four B-17s and twenty-seven P-40s as combat ready.[92] The Japanese attacks had significantly degraded the Oahu-based air forces, leaving the American carriers as the only remaining threat to the Japanese task force.

Genda's original plan had the carrier task force staying in the area of the Hawaiian Islands for several days, continually pounding Pearl Harbor and running down any American surface ships at sea. To ensure unity of command, the operation orders had placed a submarine force of some twenty-four boats under Nagumo's command for a three-day period after the initial attack. It anticipated that the two forces would be operating together in the Hawaiian area for that time.[93] These details confirm the high, operational-level aims of the original plan, in contrast to the much lower, tactical aim of the strike ordered by Admiral Nagumo.

The Combined Fleet had known from intelligence reports that the American battleships and carriers alternated weekends in port at Pearl Harbor. Genda expected that the attack would be timed to take place when the battleship group was in harbor.[94] Consequently, during October and November 1941 Genda had formulated two plans for searching out and dealing with the American carriers if they were not found in Pearl Harbor, having had calculated that there were enough fuel and ammunition after the initial attack for at least forty-eight hours of further operations.[95]

The first was to stay close to Pearl Harbor and control the air over Oahu. He felt that the Japanese force could not engage successfully the American carriers in the vicinity of Pearl Harbor if it had simultaneously to fight an American carrier group and land-based planes. To prevent that, the task force would close Oahu and blanket it with fighters to maintain complete air superiority over the island while the American carriers were engaged.[96] The other plan was to search out the American carriers and attack them beyond the range of American land-based bombers. This plan too was designed to avoid air attacks from multiple sources. Extensive patrols were to be carried out on 8 December to find the American carriers. If they were found, the Japanese would attack them regardless of their location or distance. If they were not found, the task force would return to Japan, via the Marshall Islands.

Genda's job during the attack was to coordinate all information from the planes and submarines and to prepare contingency plans in case of a counterattack. Genda knew from the advance aerial reconnaissance report that the U.S. carriers were not at Pearl Harbor, and search planes had already been sent out to find them. In preparation for the expected news that one or more had been sighted, the returning horizontal bombers were rearmed with torpedoes for use against the carriers. Even the onset of darkness had been accounted for. The Japanese had trained night torpedo-bombing teams on the veteran carriers *Akagi, Kaga, Sōryū,* and *Hiryū;* twelve bombers on each of the first two ships and eight bombers on each of the latter were certified in night attack.[97]

Rough seas prevented the strike aircraft from being recovered in a timely manner. Genda felt that, even if Nagumo could have been persuaded to order one, it was virtually impossible to launch another attack on Pearl Harbor that day unless the force proceeded southward, closer to Oahu. That would take maximum advantage of the remaining daylight. Genda was intent on instigating a running battle with American targets using smaller groups of aircraft, even at night if necessary.[98] Beyond that prospect, he had articulated three options for the withdrawal of the carrier task force from the Pearl Harbor area:

- A withdrawal in the direction from which it had approached (i.e., to the north and then west)

- Westward, passing north of Midway

- Southward, passing west of Oahu, then to the Marshall Islands.

Genda preferred the last option. This route allowed repeated attacks against Pearl Harbor over the next three days as the Japanese steamed southward, and it offered the best chance of engaging remaining elements of the Pacific Fleet. Consistent in all his plans for the initial attack's sequel was the notion of the task force remaining in the area of Oahu for several days to exploit whatever situation arose.[99] Nagumo, however, chose the first option, since it quickly put his carriers beyond the reach of counterattack.

The Combined Fleet headquarters in the home islands received many of the attack reports within minutes of their transmission. A weighty discussion occurred among the staff members as to whether Yamamoto should order Nagumo to carry out the "second attack." Captain Kuroshima, along with most of the staff, felt that not enough damage had been inflicted—Pearl Harbor had to be hit again. Yamamoto felt that the tactical-level commander was in a better place to judge whether a second attack was possible or required and denied Kuroshima's request to issue the second attack order. Kuroshima remained convinced, however, that the Pearl Harbor attack was incomplete and told Yamamoto later that Nagumo was not a suitable commander for the 1st Air Fleet.[100]

Indeed, the initial jubilation over the results of the Pearl Harbor attack soon faded. While the damage inflicted against the Pacific Fleet had created the conditions that would allow the Southern Operation to be carried out without immediate interference from it, Yamamoto and his senior staff realized that they had missed an excellent opportunity to seize Hawaii. On 9 December 1941, less than forty-eight hours after the attack on Pearl Harbor, Yamamoto ordered his staff to prepare plans for an invasion of Hawaii.[101]

The new Japanese plan, known as the Eastern Operation, was designed to establish Japanese dominance in the Central Pacific. Its timeline began with the capture of Midway in June 1942 and ended with the occupation of Oahu in March 1943.[102] In this process, Rear Admiral Ugaki ordered Watanabe to conduct another study of an invasion of Oahu. The new study concluded that Japan would now need four divisions and 1.5 million tons of shipping to capture the island, assuming that the American carriers had been eliminated as a threat beforehand.[103] This new staff assessment, conducted in mid-January 1942, highlighted the enormousness of the opportunity missed on 8 December.

OPPORTUNITY LOST

Genda observed after the war, "In my opinion, Japan had to neutralize American bases in the Pacific if she was to carry on the war successfully. Air bombardment alone would not neutralize an enemy base; complete neutralization could only be achieved if it was occupied by ground troops."[104] He realized even at the time that the effects of the Pearl Harbor attack would be transitory and that further strikes were needed immediately. Even after Nagumo ordered the task force to retire, Genda continued to urge him to stay in the area, to carry out an all-out search for the U.S. carriers and, finding them, to attack them day or night.[105] His protests were to no avail.

During the return trip to Japan, however, Genda presented Nagumo with another plan to strike while the Japanese had the Americans off balance. The Japanese 4th Fleet had run into unexpected opposition in its initial attempt to occupy Wake Island on 11 December. The assault had had to be called off, and the 4th Fleet had asked for immediate assistance. Instead of returning directly to Japan, Genda's new plan was to take the entire carrier task force to Truk; refuel, resupply, and pick up there the landing troops that had occupied Guam, plus those used in the first attempt at Wake and the South Seas Fleet troops earmarked for the seizure of Rabaul; and then swiftly invade and occupy Wake, Midway, and Johnston Islands. Troop transports had already assembled at Truk for other operations and could be easily reassigned.[106] Genda's new plan employed all of the 1st Air Fleet's considerable power in a manner consistent with the concept he had employed in designing the attack on Oahu—concentration for maximum impact.

The entire strength of the 1st Air Fleet would engage any American ships that tried to oppose it. With Johnston Island and Midway in Japanese hands, air coverage could be pushed out to interdict routes across the Central Pacific, and land-based aircraft would be within striking distance of Oahu. These islands could be used as stepping-stones for the future occupation of Hawaii, which Genda thought could be undertaken in 1942, after the occupation of the southern area.[107] The scale of Genda's plan and his confidence in the flexibility of Japanese naval power are clear indications of his impressive ability to connect the strategic imperative with the tactical necessity.

The Japanese carriers were several hundred miles north of Midway when Genda discussed his new plan with Nagumo. The admiral was at first in favor of the plan and took steps to execute it.[108] On 13 December Nagumo signaled his intent to the carrier task force. His message, issued at 8:20 that morning, conveyed two options: the "First Plan" stated that after refueling the force would "speed down to south, and, in cooperation with the Fourth Fleet, invade Wake. Then Midway, Johnston and Palmyra will be occupied, enemy land based air forces

destroyed, paving the way for an invasion of Hawaii." The "Second Plan" was to return straight to Japan.[109]

There is no indication that the Combined Fleet was aware of this new idea. Kusaka, Nagumo's chief of staff, was against it; he wanted the carriers to return immediately to Japan. Genda planned to fly to Tokyo while the carriers were replenishing at Truk to brief Yamamoto and the Combined Fleet staff on the proposal. On 15 December, however, Nagumo received orders from the Combined Fleet to support a planned new attempt to invade Wake Island, by destroying enemy forces with "an appropriate air force."[110] Nagumo that day issued Task Force Order No. 32 to proceed to Truk, where the force was to arrive on or about 22 December, refuel, and then attack Wake Island.[111] Nagumo also canceled an attack on Midway that had been ordered (without Genda's input) by the Combined Fleet.

However, on 16 December Nagumo changed his mind completely. He canceled all previous orders, now directing only the 2nd Carrier Division and supporting units to attack Wake Island, the remaining ships to return back to Japan.[112] His sudden change of mind did not result from direction from Combined Fleet headquarters; it can only be assumed that Kusaka had swayed him.

From an operational perspective, by 13 December the main air and sea threats to Japanese expansion in the south had been eliminated. British Force Z—the battleship *Prince of Wales* and the battle cruiser *Repulse*—were sunk on 10 December. The American air forces in the Philippines, in particular the B-17 bombers, had been hard hit. The remaining Dutch, British, and American naval units in the southern region, lacking direction or cohesion, did not represent a serious problem. The only remaining credible naval threat was that of the carriers of the Pacific Fleet.

The Japanese plan of seizing airfields and then moving air units progressively forward to cover subsequent invasions of new territories worked perfectly. The Japanese enjoyed the advantage of air superiority across most of the theater, and their amphibious and land operations proceeded as anticipated. The temporarily thwarted invasion of Wake Island had been the only setback.[113] Given the reality of the operational environment on 16 December when Nagumo ordered the return to Japan, Genda felt that Nagumo's force had to remain in the Central Pacific to concentrate on the U.S. Navy and its carriers. Once they were dealt with, "the rest of the Pacific would fall like ripe fruit."[114] Events were to show that once more he had an impressive grasp of the situation.

Meanwhile, Admiral Husband E. Kimmel, Commander in Chief Pacific Fleet, had ordered carriers to support the movement of troops and aircraft to reinforce Wake. The United States had three carriers available in the theater, but each was

operating as a single-carrier task force.[115] Unfortunately for the garrison on Wake, Kimmel was relieved on 17 December, and the new acting commander in chief, Vice Admiral William S. Pye, was not willing to commit his carriers against the Japanese 2nd Carrier Division, which was known to be supporting the renewed invasion of Wake.[116] Pye had to choose between the relief of Wake and the protection of Hawaii from possible further attack. Pye chose to conserve the carriers for future operations and abandoned Wake Island.

The implementation of Genda's new plan would have posed a very interesting dilemma for Pye and his successor (from 31 December), Admiral Chester Nimitz. Instead of just one carrier division, the Pacific Fleet would have confronted all six Japanese carriers, working with a now-proven doctrine for mass carrier airpower. Successive invasions of Wake, Midway, and Johnston Islands in December 1941 and January 1942 would have forced Nimitz to choose between conserving his carriers and protecting Hawaii, in which case not only Wake but Midway and Johnston Islands as well would have fallen, or committing his carriers to protect one of or all these islands before his theater had received any appreciable reinforcements in men, planes, or ships. Japanese control of the three points, let alone the destruction of any of or all the American carriers in December 1941 or early 1942, would have altered the course of subsequent events in 1942.

Nagumo's order tasking only the 2nd Carrier Division to attack Wake Island is telling. His actions reflected a fundamental misunderstanding of the Japanese operational-level center of gravity—the six-fleet-carrier task group. As long as the Japanese kept their six fleet carriers operating together, they could defeat any combination of American carriers then available. Reverting to two-carrier divisions, as was done at Wake and in a number of other operations in Phase One, negated that operational advantage and demonstrated that neither the Combined Fleet nor Naval General Staff yet understood the fundamental concepts of carrier warfare. Had Vice Admiral Pye acted in a more aggressive fashion in the relief of Wake Island and reached it before the second landing on 23 December, Admiral Yamaguchi's carriers would have been outnumbered three to two, and the Americans would have had a two-to-one advantage in aircraft.[117]

Only Genda realized the importance of keeping the fleet carriers together. In essence, the Japanese should have recognized two types of operations—those of enough value to commit all six fleet carriers, and all the others.[118]

But Genda's influence over future Japanese operational plans ended when Nagumo canceled the move to Truk. Genda remained on board *Akagi* and planned air operations for the 1st Air Fleet until April 1942. Interestingly, the mistake of failing to attack shore installations was corrected in attacks on British bases at Darwin, Australia, in February 1942, and in the Indian Ocean, in March and April. Also of note in subsequent Phase One carrier operations was the

Combined Fleet's tactic of deploying a lightly screened carrier division ahead of heavy surface units.[119] For example, on 16 January the 2nd Carrier Division, with one heavy cruiser and two destroyers, was sent into the Banda Sea to spearhead the assault against Amboina, while Vice Admiral Nobutake Kondō's force of two battleships, three heavy cruisers, and six destroyers patrolled an outer ring well to the rear, between Mindanao, Palau, and northern New Guinea. This tactic of deploying carriers as screening forces, however, would cost the Japanese dearly at the battle of Midway.

Genda was not available to provide his airpower perspective for the follow-on Japanese operations planned for Phase Two, including the renewed NGS and Combined Fleet operations to do what Genda had originally intended after Pearl Harbor—to take Midway and Johnston Islands. In particular, the Combined Fleet plan for Midway, put together by Kuroshima and Watanabe, violated two of Genda's cardinal rules—concentration of force and advancing under air cover. These oversights contributed to the Japanese disaster at Midway.[120]

The opening Japanese operations of the Pacific War were complex but well coordinated. They were characterized by innovative tactics, phased operations, and rapid exploitation of success. Although Japanese forces were not strong everywhere, elements of the IJA and IJN were able to combine when required to provide local superiority. They achieved the strategic intent, acquiring the main area of the Co-Prosperity Sphere by the end of Phase One. But they had not destroyed the combat capability of the Pacific Fleet. When the Japanese once again faced frontward to finish off their wounded adversary, they found the Americans much more capable, organized, and willing to engage.

Minoru Genda realized that Japan's long-term success depended on bases but also, most importantly, on Pearl Harbor and the Hawaiian Islands. Hawaii in Japanese hands was a safeguard against American power projection into the Central Pacific. Genda felt that Japanese control over the Hawaiian Islands, and only that, would set the conditions for a favorable settlement to the war.[121] While others in the IJN understood the importance of the Hawaiian Islands to a war in the Pacific, only Genda had the vision and foresight to conceptualize a means of delivering them to the Japanese or, alternatively, denying them to the Americans.

Genda saw Pearl Harbor as what we would now call the operational center of gravity for the war in the Pacific. He generally framed his thoughts in this way: he who controls or denies Pearl Harbor to the other side wins the war. There were actually three plans for the attack against Pearl Harbor: two developed by Genda and the one actually executed by Nagumo. The earlier of the two produced by Genda called for the carrier task force to remain near Pearl Harbor for a number of days to support the landing of Japanese troops on Oahu on 8 December. This

plan was in keeping with Genda's firm belief that the base was the target, not the Pacific Fleet. When the senior members of the Combined Fleet refused to consider this option, Genda switched to a plan to deny the use of Pearl Harbor to the Americans by destroying its base and infrastructure.

Genda later felt that the failure to attack Pearl Harbor repeatedly and to occupy Midway and Johnston Islands in the first months of the war were two of Japan's greatest "tactical" errors. Genda believed at the time that his Pearl Harbor plan held the greatest chance for Japanese success. When that opportunity was missed he tried to capitalize on the tactical situation to maintain the initiative and occupy Midway and Johnston Islands as quickly as possible.[122] This clear and immediate threat would have forced Nimitz to respond, fundamentally changing the course of events in 1942.

Had the Japanese followed either of Genda's original plans, the progress of the initial stages of the Pacific War would have been significantly different. What would have come next is unknowable, and the final outcome would have been the same. But within Genda's operational vision was the best possible "war winning" strategy for Japan. However, only after a considerable period of reflection after the war would the true brilliance of Genda's vision be understood.

NOTES

The author wishes to express his appreciation to Cdr. Ken Hansen (Ret.), whose naval warfare expertise was invaluable in the conceptualization of this article. Japanese names are given throughout in Western fashion, surnames last.

1. Alan D. Zimm, *Attack on Pearl Harbor: Strategy, Combat, Myths, Deceptions* (Philadelphia: Casemate, 2011).

2. The Greater East Asian Co-Prosperity Sphere proposed a new regional bloc of nations encompassing Japan (including the territories of Korea, Taiwan, and Sakhalin), China, Manchukuo, French Indochina, and the Dutch East Indies. Akira Iriye, *Power and Culture: The Japanese-American War, 1941–1945* (Cambridge, Mass.: Harvard Univ. Press, 1981), p. 143.

3. Minoru Genda, interview by Gordon Prange, 2 June 1947, interview no. 8, transcript, Gordon W. Prange Papers, Special Collections, University of Maryland Libraries [hereafter Prange Papers].

4. Donald M. Goldstein and Katherine V. Dillon, eds., *The Pearl Harbor Papers: Inside the Japanese Plans* (New York: Brassey's, 1993).

5. Louis Morton, "Japanese Policy and Strategy in Mid-war," U.S. Naval Institute *Proceedings* (February 1959), p. 53.

6. The right of "access to the throne" was enjoyed only by the titular heads of the military services, the chiefs of staff of the army and navy, and the war and navy ministers. The war powers of neither army nor navy were subject to control by any other governmental body. Naval Analysis Division, *United States Strategic Bombing Survey: The Campaigns of the Pacific War* (Washington, D.C.: U.S. Government Printing Office [hereafter GPO], [1946]).

7. The Marco Polo Bridge Incident was an unexpected battle between IJA troops and Chinese National Revolutionary Army units that escalated into all-out war. The stone bridge is fifteen kilometers southwest of the Beijing city center. Paul Kennedy, *Pacific Onslaught: 7th*

Dec 1941/7th Feb 1942 (New York: Ballantine Books, 1972), p. 6.

8. The Americans were involved in this equation because the IJA viewed the Philippines as a vital part of the new sphere. Iriye, *Power and Culture,* p. 161.

9. Hiroyuk Agawa, *The Reluctant Admiral: Yamamoto and the Imperial Navy* (Tokyo: Kodansha International, 1969), p. 195.

10. Timothy Kutta, "Japanese Strategy and the Opening Moves of the Pacific War, 1941–42," *Strategy & Tactics* 215, p. 42.

11. Peter Wetzler, *Hirohito and War: Imperial Tradition and Military Decision Making in Prewar Japan* (Honolulu: Univ. of Hawaii Press, 1998), p. 48.

12. Supreme Commander Allied Powers, *Reports of General MacArthur: Japanese Operations in the Southwest Pacific Area* (Washington, D.C.: GPO, 1966), vol. 2, part 1, p. 79.

13. Forces of one service were subordinated to the command of another only three times during the war, and these were all in connection with amphibious landings during the first year. There were no joint logistical arrangements. Also, Japan never developed the concept of theater or joint commands based on geography, so there was never one commander responsible for an area of operations. Naval Analysis Division, *United States Strategic Bombing Survey: The Campaigns of the Pacific War,* p. 1.

14. Yamamoto studied at Harvard University (1919–21) and had two postings as a naval attaché in Washington, D.C. In 1924 he changed his specialty from gunnery to naval aviation and became a strong proponent of the latter. He served as head of the Japanese Aeronautics Department, where he shaped the future doctrine for Japanese naval aviation before accepting a post as commander of the 1st Carrier Division.

15. John J. Stephen, *Hawaii under the Rising Sun: Japan's Plans for the Conquest after Pearl Harbor* (Honolulu: Univ. of Hawaii Press, 1984), p. 81.

16. Minoru Genda, interview by Gordon Prange, 7 April 1947, interview no. 7, transcript, Prange Papers.

17. Sadao Asada, *From Mahan to Pearl Harbor: The Imperial Japanese Navy and the United States* (Annapolis, Md.: Naval Institute Press, 2006), p. 247.

18. Minoru Genda, interview by Gordon Prange, 21 March 1947, interview no. 1, transcript, Prange Papers.

19. Minoru Genda, interview by Gordon Prange, 22 March 1947, interview no. 2, transcript, Prange Papers.

20. Owing to the limited capabilities of the aircraft of the day, fighter tactics were primarily escort and defensive in nature—providing air cover for the battleships and carriers. In Japanese naval doctrine, the torpedo bombers and dive-bombers were the offensive weapons in the air. Genda was successful in convincing his superiors that fighters too should be used in the attack role. Ibid.

21. Minoru Genda, interview by Gordon Prange, 23 March 1947, interview no. 3, transcript, Prange Papers.

22. Minoru Genda, "Tactical Planning in the Imperial Japanese Navy," *Naval War College Review* 22, no. 2 (October 1969), pp. 46–47. Peattie states that "in reality [the committee was] set up by the navy's mainstream to keep the heterodox views of Onishi and the like-minded within carefully monitored channels"; Mark A. Peattie, *Sunburst: The Rise of Japanese Naval Air Power, 1909–1941* (Annapolis, Md.: Naval Institute Press, 2001), p. 148.

23. Okumiya Masatake and Jiro Horikoshi, with Martin Caidin, *Zero: The True Story of Japan's Air War in the Pacific—as Seen by the Enemy* (New York: Bantam Books, 1997), p. 8.

24. For a detailed account of the lessons learned and not learned by the Japanese in China, see Peattie, *Sunburst,* pp. 122–28.

25. Masatake and Horikoshi, *Zero,* p. 48.

26. Minoru Genda and Masataka Chihaya, "How the Japanese Task Force Idea Materialized," in *Pearl Harbor Papers,* ed. Goldstein and Dillon, p. 8.

27. Genda, interview no. 3.

28. Genda and Chihaya, "How the Japanese Task Force Idea Materialized," p. 9.

29. Genda believed that Britain would win out, because "British fighters were superior to German fighters." Ibid.

30. In addition, the sinking of the British aircraft carrier *Glorious* by the German battle cruisers *Scharnhorst* and *Gneisenau* on 8 June 1940 reinforced the belief that airpower would not be decisive in naval warfare and that doctrine that favored battleships was in fact correct. Genda traveled back to Japan via the United States, where he was astonished by the nation's commercial airlines and industrial capacity. Minoru Genda, interview by Gordon Prange, 24 March 1947, interview no. 4, transcript, Prange Papers.

31. Ibid.

32. Peattie states, "While Genda's claim to the authorship of this important tactical innovation may indeed be valid, it is worth noting that it rests entirely on his own account. One finds no corroboration of his assertion in two of the most authoritative works on Japanese Naval Aviation, *Kaigun Koku Gaishi,* and *Ni hon Kaigun Kokushi*"; Peattie, *Sunburst,* p. 335 note 54. Genda in an interview argued that the carriers should maneuver in a "block formation" and stated that he came up with the concentration concept while watching a newsreel that showed American carriers steaming in a box formation. Since a box formation is what the Japanese eventually preferred for their carriers, many authors have assumed a direct relationship. Genda, however, is very clear that the box formation was arrived at after much experimentation; Genda, interview no. 4.

33. In September the newly commissioned *Shōkaku* and *Zuikaku* of the 5th Carrier Division would be added and the 3rd Carrier Division detached. Peattie, *Sunburst,* p. 151.

34. Minoru Genda, interview by Gordon Prange, 15 March 1948, interview no. 6A, transcript, Prange Papers.

35. The U.S. Doolittle raid was the same type of attack. Other members of the Combined Fleet, including Nagumo, felt the same. The target priority was changed only in the last war games, at the Naval Staff College in September. Minoru Genda, interview by Gordon Prange, 9 March 1948, interview no. 2A, transcript, Prange Papers.

36. Minoru Genda, interview by Gordon Prange, 4 November 1950, transcript, Prange Papers.

37. Minoru Genda, interview by Gordon Prange, 25 March 1947, interview no. 5, transcript, Prange Papers.

38. Ibid.

39. Genda, interview no. 6A.

40. Genda, interview, 4 November 1950.

41. Minoru Genda, interview by Gordon Prange, 6 April 1947, interview no. 6, transcript, Prange Papers.

42. Yasuji Watanabe, interview, 15 October 1945, Nav. no. 13, USSBS no. 96, on "Pearl Harbor–Midway–Solomons, 1945."

43. Naval Analysis Division, *United States Strategic Bombing Survey: The Campaigns of the Pacific War,* p. 3.

44. Shigeru Fukudome, interview, 9–12 December 1945, Nav. no. 115, USSBS no. 503, on "The Naval War in the Pacific, 1945."

45. A comparative analysis of the two opposing fleets as of 1 December 1941 is as follows: Pacific Fleet, nine battleships, Japan ten; Pacific Fleet three carriers, Japan ten (including four light carriers); Pacific and Asiatic Fleets thirteen heavy and eleven light cruisers, Japan eighteen and seventeen, respectively; Pacific and Asiatic Fleets eighty destroyers and fifty-five submarines, Japan 111 and sixty-four, respectively. On the American side, both the *Enterprise-* and *Lexington-*class carriers could operate eighty-plus aircraft each; Samuel E. Morison, *The Two-Ocean War* (Boston: Little, Brown, 1963), p. 39. The aircraft complement of the six Japanese carriers varied: *Akagi* and *Kaga* ninety-one, *Sōryū* sixty-eight, *Hiryū* seventy-three, and *Shōkaku* and *Zuikaku* eighty-four; Peattie, *Sunburst,* pp. 223–43. Genda's estimate of planes aboard the six carriers is as follows: *Akagi* twenty-one fighters, eighteen dive-bombers, and twenty-seven horizontal bombers; *Kaga* twenty-one fighters, twenty-seven dive-bombers, and twenty-seven horizontal bombers; *Sōryū* and *Hiryū* twenty-one fighters, eighteen dive-bombers, and eighteen horizontal bombers; *Shōkaku* and *Zuikaku* eighteen fighters, twenty-seven dive-bombers, and twenty-seven horizontal bombers. This gives for the Japanese 120 fighters, 135 dive-bombers, and 144 horizontal bombers, for a total of 399 aircraft; Minoru Genda, interview by Gordon Prange, 28 December 1947, interview no. 25, transcript, Prange Papers.

46. Naval Analysis Division, *United States Strategic Bombing Survey: Summary Report (Pacific War)* (Washington, D.C.: GPO, [1 July 1946]).

47. The specific operational objectives that flowed from these assumptions and policy were to clear the seas of enemy forces in the Far East, secure the South and North Pacific, take the Philippine Islands, take the Dutch East Indies, take Wake and Guam Islands, secure coastal areas of China, and protect the homeland and strategic sea-lanes. Nobutake Kondo, "Some Opinions Concerning the War," in *Pearl Harbor Papers,* ed. Goldstein and Dillon, p. 233.

48. Dennis Showalter, "Storm over the Pacific: Japan's Road to Empire and War," in *The Pacific War Companion: From Pearl Harbor to Hiroshima,* ed. Daniel Marston (Oxford, U.K.: Osprey, 2005), p. 37.

49. Stephen, *Hawaii under the Rising Sun,* preface.

50. Ibid., p. 3.

51. Genda, interview no. 5.

52. It was felt that the spectacle of four hundred thousand Americans living under Japanese rule would force Roosevelt to the negotiation table. Stephen, *Hawaii under the Rising Sun,* p. 93.

53. Gordon Prange, *At Dawn We Slept: The Untold Story of Pearl Harbor* (London: Penguin Books, 1991), p. 27.

54. Lt. Cdr. Suguru Suzuki, a Japanese intelligence officer, visited Hawaii in November 1941 and determined that two divisions would suffice for an invasion. He conveyed this assessment to the Combined Fleet on his return, during a meeting on 17 November 1941. Stephen, *Hawaii under the Rising Sun,* p. 85.

55. Genda, interview no. 8.

56. Yasuji Watanabe, interview by Gordon Prange, 8 January 1948, interview no. 9, transcript, Prange Papers.

57. Ibid.

58. Ibid.

59. Kameto Kuroshima, interview by Gordon Prange, 28 November 1964, interview no. 1, transcript, Prange Papers.

60. Twenty-two divisions and twenty brigades were dedicated to China, while thirteen divisions and twenty-four brigades were dedicated to Manchuria. Demobilization Bureau, *Organization and Disposition of Japanese Army, 07 December 1941* (n.p.: Reports and Statistical Division, 14 January 1952), available at Globalsecurity.org. See also Kennedy, *Pacific Onslaught,* p. 19.

61. Yasuji Watanabe, interview by Gordon Prange, 15 July 1947, interview no. 1, transcript, Prange Papers.

62. Minoru Genda, interview by Gordon Prange, 19 March 1951, transcript, Prange Papers.

63. Prange, *At Dawn We Slept,* p. 107.

64. David Evans and Mark Peattie, *Kaigun: Strategy, Tactics and Technology in the Imperial Japanese Navy, 1887–1941* (Annapolis, Md.: Naval Institute Press, 1997), p. 460.

65. Ibid.

66. From a technical perspective, the Japanese had to perfect at-sea refueling for all ship types, modify their torpedoes so that they would operate in the shallow waters of Pearl Harbor, and develop bombs that would penetrate the deck armor of the U.S. battleships. These capabilities were nonexistent when the planning started.

67. The 1st Air Fleet was composed of six carriers divided into three carrier divisions: the 1st Carrier Division *(Akagi* and *Kaga),* the 2nd Carrier Division *(Hiryū* and *Sōryū),* and the 5th Carrier Division *(Shōkaku* and *Zuikaku).* The Pearl Harbor attack plan was tested twice. In the first test, the attack was discovered before it was launched; in the second, the surprise attack was successful. In that game losses on the Japanese side were two carriers sunk, two slightly damaged, and 127 aircraft lost. American losses were four capital ships sunk and one badly damaged; two carriers sunk and one damaged; six cruisers sunk or damaged; and 180 aircraft shot down. Agawa, *Reluctant Admiral,* p. 228.

68. Shigeshi Uchida, "Extracts from Diary and Duty Book of Capt. Shigeshi Uchida," in *Pearl Harbor Papers,* ed. Goldstein and Dillon, p. 81.

69. As tensions increased, the Japanese began to perceive the buildup of American airpower in the Philippines as a significant threat, specifically the B-17 bombers. Minoru Genda, interview by Gordon Prange, 11 March 1948, interview no. 4A, transcript, Prange Papers.

70. Prange, *At Dawn We Slept,* p. 24.

71. Koichi Shimada, "The Opening Air Offensive against the Philippines," in *The Japanese*

Navy in World War II: In the Words of Former Japanese Naval Officers, ed. David C. Evans, 2nd ed. (Annapolis, Md.: Naval Institute Press, 1986), p. 76. The U.S. air strength in the Philippines was estimated at one fighter group of four squadrons (108 planes) at Nichols Field; one bomber group at Clark Field, comprising three bomber squadrons (about thirty-eight planes), one fighter squadron (twenty-seven planes), and two reconnaissance squadrons (thirteen planes); and twenty fighters based on other, subsidiary fields—an aggregate total of 206 aircraft. Besides these, the Navy was believed to have about seventy scout planes and carrier-borne fighters at Olongapo and Cavite. Supreme Commander Allied Powers, *Reports of General MacArthur,* p. 80.

72. In 1941, the average first-line Japanese pilot had between five hundred and eight hundred flying hours. About 50 percent of Japanese army pilots and 10 percent of navy pilots had had actual combat experience on the continent. The carrier air groups were led by the most experienced combat veterans available. Naval Analysis Division, *United States Strategic Bombing Survey: Summary Report (Pacific War),* p. 2.

73. Shimada, "Opening Air Offensive against the Philippines," p. 76.

74. Ibid., pp. 76–78.

75. The 2nd Carrier Division and *Akagi* were chosen because of their shorter ranges. It was felt that it would be very difficult for them to refuel in the rough seas of the North Pacific. Genda, interview by Gordon Prange, 12 March 1948, interview no. 5A, transcript, Prange Papers, and Prange, *At Dawn We Slept,* p. 282.

76. Matome Ugaki, *Fading Victory: The Diary of Admiral Matome Ugaki, 1941–1945,* trans. Masataka Chihaya (Pittsburgh: Univ. of Pittsburgh Press, 1991), p. 13.

77. Planes would fly from there to cover the landings at Aparri scheduled for 10 December. The landings at Aparri and Camiguin Island were executed to establish air bases to support the main Lingayen Gulf landing. Shimada, "Opening Air Offensive against the Philippines," p. 81.

78. Yasuji Watanabe, interview by Gordon Prange, 31 October 1949, interview no. 3, transcript, Prange Papers.

79. Prange, *At Dawn We Slept,* p. 327.

80. Lieutenant Commander Itaya commanded the fighter unit on *Akagi* and Lieutenant Commander Murata the torpedo bombers. Lieutenant Commander Takashige Egusa commanded the dive-bombers on *Sōryū,* Lieutenant Commander Takahasi those of *Shōkaku.* Lieutenant Commander Shimazaki was from *Zuikaku,* Lieutenant Commander Shindo from *Akagi.*

81. Japanese carriers could not launch all their aircraft at once; therefore, the attacks had to be launched in waves. The raid at Pearl Harbor comprised one attack of two waves, the first of 183 aircraft and the second of 167. The second attack would have been made by horizontal bombers, dive-bombers, and fighters. Minoru Genda, interview by Gordon Prange, 29 December 1947, interview no. 26, transcript, Prange Papers.

82. H. P. Willmott, *Empires in the Balance: Japanese and Allied Pacific Strategies to April 1942* (Annapolis, Md.: Naval Institute Press, 1982), pp. 13–14.

83. Ugaki, *Fading Victory,* p. 13.

84. For the covert transit of the force toward Hawaii, see Marty Bollinger, "Did a Soviet Merchant Ship Encounter the Pearl Harbor Strike Force?," *Naval War College Review* 60, no. 4 (Autumn 2007), pp. 93–110.

85. For the most incisive examination of the details of the attack, see Zimm, *Attack on Pearl Harbor.* This author does not agree, however, with all its conclusions.

86. Ninety-four of 183 aircraft in wave one and eighty-nine of 167 in wave two were assigned air-superiority targets. H. P. Willmott, Tohmatsu Haruo, and Spencer W. Johnson, *Pearl Harbor* (London: Cassell, 2001), p. 180.

87. Masataka Chihaya, trans., "War Diary of the 5th Carrier Division, 1–31 December, 1941," in *Pearl Harbor Papers,* ed. Goldstein and Dillon, p. 221.

88. Minoru Genda, interview by Gordon Prange, 4 June 1947, interview no. 9, transcript, Prange Papers.

89. Specific numbers vary, but the figures most often quoted are ninety-seven naval and seventy-seven army aircraft destroyed, with another 121 army and thirty-one naval aircraft damaged; Willmott, Haruo, and Johnson, *Pearl Harbor,* p. 134. Zimm quotes the following for aircraft and losses: of 143 Army Air Corps operational aircraft with eighty-eight under repair, after the attack eighty-seven were operational, seventy-nine repairable, and sixty-five destroyed, for a net loss of fifty-six operational aircraft. Of the 301 Navy aircraft, before the attack 202 were operational, fifty-two were in storage, thirty-one in overhaul, and sixteen under repair. Of these, eighty were destroyed and 169 damaged; Zimm, *Attack on Pearl Harbor,* p. 215.

90. The difference in the number between 222 parked aircraft and the 450 total is the aircraft believed to have been in the destroyed hangars. CO Task Force, message to task force, 0400 12 December, in "War Diary of the 5th Carrier Division, 1–31 December, 1941," trans. Chihaya, p. 228.

91. Goldstein and Dillon, eds., *Pearl Harbor Papers,* p. 308.

92. "Aircraft at Pearl Harbor," *WW II Pacific, Dec 7, 1941,* updated 25 July 2004, www .ww2pacific.com/. See also Joint Committee on the Investigation of the Pearl Harbor Attack, *Investigation of the Pearl Harbor Attack: Report of the Joint Committee on the Investigation of the Pearl Harbor Attack to the Congress of the United States* (Washington, D.C.: GPO, 1946) [hereafter *Investigation of the Pearl Harbor Attack*], pp. 59, 65, available at www .ibiblio.org/.

93. Tatsuwaka Shibuyu, "Japanese Monograph no. 102: Submarine Operations, December 1941–April 1942," in *Pearl Harbor Papers,* ed. Goldstein and Dillon, p. 272.

94. Yasuji Watanabe, interrogation by Lt. Col. B. E. Sackett, 26 November 1945, transcript, Watanabe IPS Int. no. 2, box 20, Prange Papers.

95. Ibid. In fact, Task Force 8, based on the aircraft carrier *Enterprise,* was about two hundred miles west of Oahu en route to Pearl Harbor, and Task Force 12, with the carrier *Lexington,* was about 460 miles southeast of Midway en route to Midway. *Investigation of the Pearl Harbor Attack,* p. 64.

96. Minoru Genda, interview by Gordon Prange, 30 December 1947, interview no. 27, transcript, Prange Papers.

97. Ibid.

98. Ibid.

99. Minoru Genda, "Analysis no. 2 of the Pearl Harbor Attack," in *Pearl Harbor Papers,* ed. Goldstein and Dillon, p. 40.

100. Kameto Kuroshima, interview by Gordon Prange, 13 December 1964, interview no. 3, transcript, Prange Papers.

101. Stephen, *Hawaii under the Rising Sun,* p. 1.

102. Ibid., p. 92.

103. Yasuji Watanabe, interview by Gordon Prange, 3–4 February 1966, transcript, Prange Papers.

104. Genda, interview, 19 March 1951.

105. Genda, interview, 4 November 1950.

106. It was Genda's plan to fly to Tokyo once the task force reached Truk, to discuss the plan with the Combined Fleet and the NGS. Genda later felt that Yamamoto would have agreed but that the NGS would have been opposed. Minoru Genda, interview by Gordon Prange, 3 February 1950, interview no. 4B, transcript, Prange Papers.

107. Minoru Genda, interview by Gordon Prange, 20 March 1948, interview no. 10A, transcript, Prange Papers.

108. Kusaka was against the plan. Genda, interview no. 27.

109. CO, message to task force, 0820 13 December, in "War Diary of the 5th Carrier Division, 1–31 December, 1941," trans. Chihaya, p. 229.

110. Combined Fleet telegram, Operational Order No. 19, 0200 15 December, in "War Diary of the 5th Carrier Division, 1–31 December, 1941," trans. Chihaya, p. 230.

111. Task Force Signal Order No. 32, 0805 15 December, in "War Diary of the 5th Carrier Division, 1–31 December, 1941," trans. Chihaya.

112. Task Force Signal Order No. 34, 1600 16 December 1941; Genda, interview no. 4B.

113. At the end of four months of war, they had executed the majority of their initial program and with greater ease than they had foreseen. Naval Analysis Division, *United States Strategic Bombing Survey: Summary Report (Pacific War),* p. 3.

114. Genda, interview no. 10A.

115. The U.S. relief attempt centered on Task Force 11, with the carrier *Saratoga,* and Task Force 14, centered on *Lexington*.

116. Admiral Kimmel was relieved of command on 17 December 1941 and replaced temporarily by Vice Admiral Pye. Adm. Chester Nimitz would take over permanent command on 31 December 1941 as Commander, U.S. Pacific Fleet and Commander in Chief, Pacific Ocean Area.

117. *Enterprise* normally carried eighty to ninety aircraft, while *Lexington* and *Saratoga* normally carried between eighty-one and eighty-three aircraft each; Globalsecurity.org. *Hiryū* and *Sōryū,* according to Genda, started the operation with fifty-seven aircraft each but had suffered casualties during the Pearl Harbor attack; Genda, interview no. 25.

118. This fact was readily revealed at the battle of the Coral Sea, 4–8 May 1942, where two carriers on each side fought each other to a stalemate. Coral Sea has rarely been seen for what it really was: the battle that destroyed the Japanese operational center of gravity. Jonathan Parshall and Anthony Tully, *Shattered Sword: The Untold Story of the Battle of Midway* (Washington, D.C.: Potomac Books, 2005), p. 405.

119. Willmott, *Empires in the Balance,* p. 285.

120. The Midway plan called for the carriers to depart Japan and sail alone toward Midway, approaching the island from the northwest. Genda recommended that the plan be changed to have the carriers sail from the Marshall Islands and so approach Midway from the southwest. This track would have given the carriers support from the air forces on all the Japanese-held islands of the Central Pacific. Mitsuo Fuchida and Masatake Okumiya, "The Battle of Midway," in *Japanese Navy in World War II,* ed. Evans, p. 8.

121. Stephen, *Hawaii under the Rising Sun,* p. 2.

122. Genda, interview no. 10A.

RESEARCH & DEBATE

WAS THERE SOMETHING UNIQUE TO THE JAPANESE THAT LOST THEM THE BATTLE OF MIDWAY?

James P. Levy

We military historians have a tendency to obsess over the causes of victory and defeat in war. Like economists, we have a profound desire to identify those actions that ensure success or generate failure, and like economists we are not overly good at it. At best, we can state the obvious, as when the disparity of forces between two opponents is extreme, or ascertain certain verities, like "It is good to have the better trained troops," or "Keep your troops better equipped, fed, and rested than your opponent's." At worst, this obsession with winning and losing can lead to a lot of shameless Monday-morning quarterbacking and counterfactual historical speculation.

The battle of Midway is a prime example of this profound desire to identify such causes and, as its usual concomitant, to attribute blame for defeat. The victory of the U.S. Navy over the Imperial Japanese Navy on 4 June 1942 was both clear and unexpected. Since by many criteria the Japanese fleet was both qualitatively and quantitatively superior to its U.S. counterpart, historians have felt a great need to explain the outcome of the battle. One of the most popular books on the subject describes the victory as a "miracle," and this quasi-supernatural hint at an explanation lies close to the surface of many popular accounts of the battle of Midway.[1] Americans are, like everyone else, often quite content to believe that God is on their side.

However, let us put aside popular perception to see what naval historians have to say about the outcome of the battle. Many explanations have been proffered. Paul Dull finds the key to the outcome of the battle in what he perceives as

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the adoption by Admiral Isoroku Yamamoto and his planning staff of a best-case scenario. He cannot understand why Yamamoto did not assume that the Americans would be exactly where they were on the morning of 4 June—a claim I find baffling.[2] Such an assumption would have required not genius but clairvoyance. Ronald Spector quotes Admiral Matome Ugaki's famous lament that the Japanese had been too "conceited," but this is surely more an excuse on Ugaki's part than an explanation of what happened.[3] Douglas Smith sees the root cause of Japanese failure in Admiral Chūichi Nagumo's "arrogance and intransigence"; H. P. Willmott accuses the Japanese of suffering from "victory disease," an ailment whose symptoms he describes as "illusion," "confusion," and "self-deception."[4] Harry Gailey is a bit vague in his attribution of blame but does point to Nagumo's decisions as "contributing" to Japan's defeat, and he describes Yamamoto's plan as "complex" and "grandiose."[5] A recurring assumption about the battle appears to be that the Japanese did as much to lose the battle as the Americans did to win it, or more.

The latest and in many ways most complete account of the battle is Parshall and Tully's *Shattered Sword* (2005).[6] While a work of fine research and well informed analysis, it is obsessed with debunking perceived "myths" about the battle, shooting down Mitsuo Fuchida's account of the battle in particular, and demonstrating the faults the authors believe existed in Japanese practice and doctrine. Parshall and Tully lay on blame with a trowel. Minoru Genda's plan, they maintain, was flawed; Nagumo was rigid and uninspired, lacking a firm grasp of the technical intricacies of his carrier force; while Yamamoto is portrayed as simply inept. In their efforts Parshall and Tully throw around some pretty robust anthropological assertions. Nagumo was not just personally a drone but the product of a culture that "valued conformity and obedience over creativity or personal initiative."[7] In direct contradiction to this claim, it would appear that Yamamoto and his staff (and Admiral Toyoda later in the war) were too creative, dreaming up intricate "monstrosities" in their febrile Asiatic heads. The authors go even farther, saying, "It is clear that in this regard that Japanese naval strategy was influenced from its very inception by Oriental philosophies on the conduct of war."[8] Leaving aside the fact that no one uses the term "oriental" anymore, it is hard to reconcile the belief that a society can both be wedded to "conformity and obedience over creativity and personal initiative" and still be the heir of Sun Tzu. Be that as it may, in the end Parshall and Tully simply opine that Japanese strategy was "warped."

Well, perhaps it was warped. Perhaps the Japanese were conceited, arrogant, confused, grandiose, inept, rigid, and taken in by what must be wrongheaded "Oriental philosophies on the conduct of war" that undermined their professional judgment. Yet maybe, just maybe, the Japanese did not lose the battle. Perhaps the Americans, who were very good and very lucky, won it, which leads me to ask

whether any such explanations and approbation as historians have meted out are needed to understand what the Japanese were doing during Operation MI—their campaign to capture Midway and defeat the American fleet. I do not believe we do need them. The plan to use an assault on Midway to provoke a fleet engagement was not at all foolish. Japan still enjoyed a marked superiority over the U.S. Navy in the Pacific. To surrender the initiative would have been dangerous and demoralizing. To wait around for the Americans to shift the carriers *Wasp* and *Ranger* to the Pacific and repair *Saratoga* would have been unconscionable, and to give them a chance to bring the fruits of the Naval Act of 1938 (the Second Vinson Act) off the slipways and into battle would have been suicidal. So in the spring of 1942, it was imperative to attack the Americans as soon as possible.

By examining the details of the battle, one can argue that certain actions for which the Japanese have been chastised were in no way bizarre or patently incorrect. Dividing the fleet into several dispersed subunits was not reckless or bizarre, and in fact the decision to disperse the fleet was unavoidable, for three reasons. First, the Imperial Japanese Navy was in 1942, like all other major navies, a hybrid force of older, slower ships and newer, faster ones. The carrier force could not be and should not have been combined with the battle fleet. The Americans did not combine fleets in 1942, and neither should have the Japanese. The surviving battlewagons of Pearl Harbor were never shackled like a ball and chain to the fast carrier task forces. This reality also applies to using the carriers *Junyo* and *Ryuho* with the fast carriers of Nagumo's Kido Butai—they were too slow. Second, the Midway operations involved both a convoy escort and an invasion force, as would the U.S. operations against both Tarawa and Guam, to give two examples. This meant the necessary division of the force into a carrier group, a covering group, and a landing group, at least. Third, given the vast expanse of the Pacific and the desire to grapple with the enemy, it was inevitable that forces would be dispersed to increase their chances of finding and engaging the American fleet. An overly compact disposition would have left too much of the ocean uncovered and given the Americans more room both to maneuver and to escape.

Only a dogmatic, Tinkertoy, popularized version of Mahan insists on a complete and permanent concentration of a fleet.[9] One can as easily invoke the history of the Royal Navy, which the Japanese knew well, and the theories of Sir Julian Corbett, as any attachment to esoteric Asian military theory to understand why the Japanese might disperse their forces to coax an inferior enemy to battle.[10] For the Royal Navy, a key strategic problem had historically been how to entice recalcitrant enemies like Spain, France, Italy, and Germany to come out and fight. Anyone with a cursory knowledge of the campaign of Trafalgar would know that the Royal Navy was never averse to dividing the fleet to increase the chance of intercepting and engaging the enemy. The British

had divided their forces strategically between Admiral Sir William Cornwallis in the English Channel and Admiral Lord Nelson off Cádiz to keep the enemy fleet divided. Nelson then tactically divided his fleet in the face of a numerically superior enemy the better to crush the Franco-Spanish fleet between two fires at Trafalgar. Jutland, the most studied battle of the interwar period, was a stark example of the problem of a massed fleet forcing an enemy to fight when that enemy knew he was outnumbered. On 31 May 1916 both Admirals John Jellicoe and Reinhard Scheer divided their fleets in the hope of drawing part of the enemy fleet into a tactical trap. Once Scheer fully comprehended that the Grand Fleet was out, he successfully ran for home, leaving a rigidly united British fleet to deal rather poorly with his evasions.

As for Yamamoto, since forcing an engagement was his primary objective, he was going to have to take some risks to bring it about. Dividing his fleet into dispersed subunits was just such a risk. The British had run similar risks in their naval war in the Mediterranean during the period 1940–42.[11] That the Americans would respond more aggressively than Britain's historical adversaries was something on which the Japanese were counting. Nevertheless, if the Americans discovered the entire Imperial Japanese Navy in one tight formation, they might easily have balked at the odds. Again, the Japanese wanted to fight a battle but were concerned that the Americans might not oblige. The Japanese, however, were not aware that the Americans knew of their plans and had responded preemptively with characteristic aggressiveness. Thus American diligence, not Japanese arrogance or incompetence, was the deciding factor.

This brings us to the issue of the conceit, arrogance, or overconfidence of the Japanese as crucial to explaining their failure at Midway. We have seen that this theme appears in the work of such capable authors as Ronald Spector and H. P. Willmott. Yet I would argue that these terms are meaningless as descriptors of causal agency. Any perusal of history will show that successful commanders from Julius Caesar to George Patton, from Alexander of Macedon to Nelson of Trafalgar, displayed personality traits that could by any definition be construed as conceited and confident in the extreme. Overconfidence, or excessive arrogance, is an ex post facto judgment, not an identifiable trait that can be disassociated from the knowledge that a confident or arrogant person has failed. If the Duke of Wellington had lost Waterloo or Robert E. Lee Chancellorsville, you can bet your bottom dollar that they would have been pilloried by historians after the fact as having shown conceit and overconfidence. If you need to know the results of an action to hand down a verdict of "overconfident," one can legitimately contend that the term has no explanatory power.

Given this assessment, there is not much that the Japanese can be blamed for doing wrong in the planning and execution of Operation MI. On an abstract

level, fault can be found in the rigidity of Japanese carrier doctrine, designed as it was to deliver massed, integrated, and coordinated blows against a given target. When the tactical doctrine was given two things to do simultaneously, as it was at Midway (neutralize the island *and* the American carrier force), trouble arose. However, since the doctrine of massed strikes for decisive results is that espoused as the correct one by carrier enthusiasts then and now, and since the British have been roundly criticized for not adopting such a doctrine, it is a bit disingenuous for historians to blame the Japanese for sticking to it.

On a practical level, Yamamoto should very likely have pushed up the Dutch Harbor raid by a day, to give the Americans more time both to worry about its implications and to organize a response. Nagumo and his staff should have increased the dawn search by as many as six more Nakajima BSN (Kate) torpedo bombers acting in a reconnaissance role. All Japanese commanders should have immediately broken radio silence once it became obvious that the fleet had been sighted and surprise was no longer a consideration. All these actions would have been prudent, but none would likely have changed the outcome of the battle, because the Americans did very many things right. Brilliant code breaking was combined with an outstanding application of the intelligence thus obtained. Admirals Jack Fletcher and Raymond Spruance bravely and correctly launched their strikes before all the relevant information was in, and at an uncomfortably long range. Once success had been gained, the Americans acted with admirable caution. When you add in elements like long-range Catalina flying boats, radar, and luck, the Americans had more than enough factors working in their favor to win the battle. No cultural traits or ethno-racial characteristics need be invoked to explain the outcome.

What are my conclusions? First, military historians collectively, as a profession, are too often quick to apportion blame. I would posit as a model for avoiding this habit Eric Grove's excellent account of the battle of the Philippine Sea, wherein he praises both Spruance and Admiral Jisaburō Ozawa while stressing—and thereby hitting the nail on the head—the differences in technology and training as having been decisive.[12] Second, we military historians can be too eager to adopt cultural explanations, the wholly inadequate expedient of positing "national character," or some other vague formulation as an explanatory force. As I like to ask my classes: Was French national character expressed in 1805–1806 or in 1870–71? Who were the "real" Frenchmen, the victors on the Marne in 1914 or the losers at Sedan in 1940? Some historians may take comfort in such "explanations," but this author does not find them powerful or persuasive.

On a final note, I believe military historians are too often wary of invoking another power—the power of chance and contingency. It is understandable, and in many ways laudable, to try to determine causality and the factors that contribute

to victory and defeat, but we can be fooled into adopting an overly Newtonian view of battle, as if victory were controlled by iron laws of discrete cause and effect. In short, no matter how disquieting or unsatisfactory it may sound, luck (by which I mean unplanned or unexpected events that take place in an unintended manner without or outside human control) can play an explanatory part in assessing the causes of victory and defeat. The smile of the goddess of battle may be a more powerful metaphor than we would like to believe for the random or chance factors that influence the course of battle.

NOTES

1. See Gordon Prange, *Miracle at Midway* (New York: Penguin, 1983).

2. Paul S. Dull, *A Battle History of the Imperial Japanese Navy 1941–1945* (Annapolis, Md.: Naval Institute Press, 2006), pp. 166–67.

3. Ronald Spector, *At War at Sea* (New York: Viking, 2001), pp. 202–203.

4. Douglas Smith, *Carrier Battles: Decision in Harm's Way* (Annapolis, Md.: Naval Institute Press, 2006), p. 118; H. P. Willmott, *The Barrier and the Javelin* (Annapolis, Md.: Naval Institute Press, 1983), pp. 79–80.

5. Harry Gailey, *The War in the Pacific* (Novato, Calif.: Presidio, 1996), pp. 152–71.

6. Jonathan Parshall and Anthony Tully, *Shattered Sword: The Untold Story of the Battle of Midway* (Dulles, Va.: Potomac Books, 2007).

7. Ibid., pp. 408–409.

8. Ibid., p. 409.

9. See Jock Gardner's chapter 7 in *The Development of British Naval Thinking,* ed. Geoffrey Till (New York: Routledge, 2006), esp. pp. 134–59. The quote on page 151 is illuminating: "The proper balance between the concentration and division of force is difficult to achieve. Roskill was, like Sir Julian Corbett (whom he much admired and frequently quoted), suspicious of the tradition of massing forces as a prerequisite to seeking decision with the enemy by battle at sea." The Japanese, like the British, were not wedded to mass.

10. For the influence of the Royal Navy on the Imperial Japanese Navy, see Arthur Marder, *Old Friends, New Enemies* (New York: Oxford Univ. Press, 1981), and Sir Julian Corbett's masterwork *Some Principles of Maritime Strategy* (Annapolis, Md.: Naval Institute Press, 1988). The introduction by Eric Grove to this edition is priceless.

11. For several examples of operational dispersion and misdirection see the Naval Staff history, *The Royal Navy and the Mediterranean Convoys* (New York: Routledge, 2007), as well as Jack Greene and Alessandro Massignani, *The Naval War in the Mediterranean, 1940–1943* (London: Chatham, 1998).

12. Eric Grove, *Sea Battles in Close-Up* (Annapolis, Md.: Naval Institute Press, 1993), pp. 163–97.

STRENGTH IN NUMBERS THE REMARKABLE POTENTIAL OF (REALLY) SMALL COMBATANTS

Jimmy Drennan

You are a tactical commander tasked with a mission to seek out and destroy one of the enemy's premier capital ships in his home waters. You have two potential striking forces at your disposal: a world-class surface combatant of your own with a 99 percent probability of mission success ($P_s = 0.99$) or a squadron of eight independently operating, missile-carrying small combatants, each with a chance of successfully completing the mission no better than a coin flip ($P_s = 0.5$). Do you go with the almost sure thing and choose to send in your large combatant? As it turns out, the squadron of small combatants has an even higher overall P_s but let us now assume that you have advanced to operational commander. You might have more concerns than just overall P_s. What are the defensive and logistical requirements for each option? How much fleet investment are you risking with each option? What will it cost to replace the asset(s) if lost? What capability does the striking force have after successful enemy action (i.e., resilience)? An analysis of these factors, intentionally designed to disadvantage small combatants, is actually overwhelmingly in their favor. The results verify what naval strategists and tacticians have long known—that for certain offensive missions, an independently operating group of even marginally capable platforms can outperform a single large combatant at lower cost and less risk to the mission.

THE WAR-AT-SEA FLOTILLA: A TEST CASE

Retired U.S. Navy captains Jeff Kline and Wayne Hughes introduced "Between Peace and the Air-Sea Battle: A War at Sea Strategy," in which they describe a flotilla of small, missile-carrying surface combatants designed to challenge Chinese aggression in East Asian waters.[1] The flotilla ships would utilize largely independent tactics that relied little on networked command and control, to produce a powerful cumulative combat capability.

What would the flotilla look like? In rough terms, we envision individual small combatants of about six hundred tons carrying six or eight surface-to-surface missiles and depending on soft kill and point defense for survival, aided by offboard manned or unmanned aerial vehicles for surveillance and tactical scouting. To paint a picture of

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possible structures, we contemplate as the smallest element a mutually supporting pair, a squadron to comprise eight vessels, and the entire force to be eight squadrons, of which half would be in East Asian waters. The units costing less than $100 million each, the entire force would require a very small part of the shipbuilding budget.[2]

This flotilla concept provides an ideal test case to compare against a world-class surface combatant, but first we must establish a few key assumptions on which this analysis is based.

Statistical Independence. The math behind this analysis hinges on the idea that the outcome of one small combatant's engagement has no effect on the others in the squadron. While true statistical independence is nearly impossible to achieve in real-world naval operations, the "war-at-sea flotilla" concept is modeled closely with independently operating units, the potential for various ship classes, and the inclusion of allied navies, which may use different tactics, techniques, and procedures (TTPs). This concept of operations is a major departure from today's heavily networked forces that generate combat power through the integrated actions of several units. In those forces, the actions of one unit can have profound impact on the effectiveness of another.

Defensive and Logistical Requirements. For the purposes of this analysis, we will assume that the defensive and logistical requirements are roughly equivalent for both the small combatant squadron and the large combatant. Both would require defensive support in warfare areas not directly related to the current mission. Even a multimission, blue-water combatant would employ nonorganic support, such as maritime patrol aircraft or early-warning assets, to watch its back while conducting a focused offensive mission. As for logistics, any surface asset would need an oiler nearby to conduct sustained operations in enemy waters. A nuclear-powered aircraft carrier would still require periodic support to replenish its stores of jet fuel. The logistics tail would be shorter for a large combatant than for a flotilla, since it carries much of its own maintenance and supply support, but that can be a detriment in a mission involving an exchange of missile salvos. While the structure of defensive and logistical support may differ greatly between the flotilla and the large combatant, one can assume the drain on resources would be about the same for both options.

Unit Cost. Hughes and Kline estimate the unit cost of the flotilla small combatants to be at eighty million dollars. Therefore, a squadron of eight combatants would cost $640 million. The unit cost of the large combatant is assumed to be a billion dollars, which is an underestimate for relevant U.S. Navy platforms. The cost estimates in this analysis are intentionally set up to work against the flotilla concept in order to emphasize its potential for savings.

Enemy Capabilities. To disadvantage further the flotilla concept, let us assume the small combatants are significantly overmatched by the enemy combatant. In a first strike, the enemy combatant is capable of simultaneously targeting six of the eight squadron combatants. Against the large combatant, it is capable of conducting a devastating mission kill in which the ship may not be sunk but the cost of repairing it to full mission capability would be comparable to the unit cost. As a starting argument, we will presume in either case the enemy can achieve a mission kill with 10 percent probability (P_{mk} = 0.10), since both striking forces have similar levels of defensive support. One might argue that P_{mk} should be lower for the large combatant, because it possesses superior self-defense capabilities; however, it could also be argued that the mobile, distributed nature of the small-combatant squadron compensates for each ship's lack of self-defense by complicating the enemy's targeting process. It may be relatively easy for the enemy to target one or two of the small combatants, but it remains a challenge to eliminate at one stroke the entire squadron.

SELECTING THE RIGHT STRIKING FORCE: ANALYSIS RESULTS

Using the generic introductory scenario, we can compare the small combatant squadron with the large combatant in terms of performance, cost, and risk.

Overall Effectiveness. We are given the overall effectiveness of the large combatant as P_s = 0.99 and the individual effectiveness of the small combatants as $P_{s,ship}$ = 0.5. To determine the overall effectiveness of the squadron, it is easiest to first estimate the probability that none of the small combatants successfully accomplish their mission. The probability that any one small combatant will not accomplish the mission is

$$1 - P_{s,ship} = 0.5.$$

Since the outcome of each engagement is estimated as independent of one another, the probability that none of the eight small combatants accomplish the mission is

$$(1 - P_{s,ship})8 = 0.004.$$

The probability that at least one of the small combatants accomplishes the mission is the converse of the previous result, or

$$1 - (1 - P_{s,ship})8 = 0.996.$$

In other words, the squadron has a 99.6 percent probability of success vice 99 percent for the large combatant. This may not seem like much of an improvement, but it is more remarkable when considering the unit cost of each option.

Cost-Effectiveness. The unit costs are given as one billion dollars for the large combatant and eighty million for the small combatant, so the squadron of eight small combatants is the more affordable option, at $640 million. In addition, it has been established that the squadron can outperform the large combatant for this particular offensive mission, in which the individual squadron ships are actually overmatched by the enemy. The squadron not only is more cost-effective than the large combatant but actually delivers better performance at lower cost. As a commander, would you rather invest a billion dollars in a striking force that fails ten times in a thousand attempts or save $360 million with a striking force that fails only four times in a thousand attempts? To put it another way, if you were to invest the same billion dollars in twelve small combatants, you could deliver a striking force that failed only two times in ten thousand attempts ($P_s = 0.9998$).

Resilience after Enemy Action. One way to consider risk is to look at the impact to the mission if the enemy is able to consummate successfully a first attack. We have assumed the enemy is equally capable of attacking the large combatant and the squadron of small combatants. If the enemy combatant achieves a simultaneous mission kill against six of the small combatants, only two will remain to continue the mission. These two small combatants have a combined 75 percent probability of successfully completing the mission. On the other hand, if the enemy successfully conducts a mission kill against the large combatant, the probability of successfully completing the mission is 0 percent, and you lose the other warfare-area capabilities that the large combatant could bring to bear in other missions. The additional investment required to provide onboard logistics support is also lost.

Another way to look at this risk is to calculate the expected damage cost of each option in the long run. Assuming the enemy is able to conduct devastating mission kills (in which the repair costs are comparable to the unit cost) a conservative 10 percent of the time ($P_{mk} = 0.1$) for both the large and small combatants, then the expected damage cost for the large combatant is

$$E(cost)_{large} = (0.1)(\$1B) = \$100 \text{ million}.$$

Likewise, the expected damage cost for the squadron of small combatants is

$$E(cost)_{squadron} = (0.1)(\$80M \cdot 6) = \$48 \text{ million}.$$

In the long run, the enemy is expected to cause fifty-two million dollars less damage per mission in the case of the small combatants. Even if the enemy were more likely to succeed in targeting six small combatants simultaneously, how much would you as a commander be willing to pay for 75 percent follow-on capability vice 0 percent?

LESS COMMUNICATIONS, LESS COST, MORE COMBAT POWER: ANALYSIS INSIGHTS

The results of this analysis seem to indicate that the squadron of small combatants is an obvious choice for naval missions involving direct action against the enemy fleet. Yet the scenario described is quite generic and says nothing about the actual TTPs and systems the squadron will utilize in prosecuting the enemy. How can such a generic scenario really prove anything about the effectiveness of small combatants? The key is that two fundamental principles underlie this analysis and can be applied in much broader terms.

First, independently operating, redundant, and at least marginally capable units will greatly increase any system's overall effectiveness, primarily because unit faults and errors are not permitted to propagate through the system as they would in net-centric warfare (e.g., flawed group tactics or a false link track). For surface combatants, an individual effectiveness of 50 percent is sufficient to produce affordably a formidable striking force. For less expensive systems, that number may be even less. Ultimately, this kind of system is so effective because it is highly unlikely that none of the individual units will successfully complete the mission.

The second principle that contributes to the appeal of the small combatant squadron is that the price of military systems increases exponentially as you attempt to improve individual unit performance closer and closer to perfection. Most of our warships today are designed well past the "knee" in the cost curve. Small combatants can be built with marginal capability at (relatively) low cost. One new concept illustrates how less-capable ships can affordably produce equivalent performance to that of more capable ones in certain situations. In his essay "Buy Fords, Not Ferraris," Captain Henry Hendrix, USN, proposes "influence squadrons," composed of light amphibious ships, large combatants, littoral combat ships (LCSs), and small combatants, to alleviate the need for some carrier strike groups, with a smaller price tag.[3] The purpose of the war-at-sea flotilla, however, is not to replace current fleet assets but to fill a vital niche not now covered to fight a war at sea in littoral waters. Therefore, the cost must be small. Hughes and Kline suggest the cost of maintaining a fleet of sixty-four flotilla ships, steady state, should be less than 3 or 4 percent of the shipbuilding budget.[4]

THINK SMALL: ANALYSIS CONCLUSION AND RECOMMENDATIONS

One look at the writings of Sir Julian Corbett or Captain Hughes's *Fleet Tactics and Coastal Combat* will show the reader that the benefit of small combatants in certain aspects of naval warfare is not a new discovery.[5] In fact, this analysis may seem like the kind of thinking that led to the development of the LCS, which was, after all, war gaming and analysis that advocated small combatants.[6] The LCS

program is not, however, a realization of the principles discussed in this analysis. Both *Freedom-* and *Independence-*class LCSs are large, multimission warships (albeit one mission at a time) in which mission packages cost a premium to achieve high probabilities of success. The war-at-sea flotilla, if constructed as Hughes and Kline recommend, would exemplify the advantages of independently operating small combatants.

None of this is meant to condemn the LCS or any other ship class. Every ship in the U.S. fleet, along with the distributed networks that multiply its combat power, has an important role in the mission of winning the nation's wars, deterring aggression, and maintaining freedom of the seas. The purpose here is to provide an analytical basis for including independently operating squadrons of small combatants in the discussion for future force structure. For targeted offensive missions at sea, concepts such as the war-at-sea flotilla can provide higher performance than large combatants at lower cost and with greater resilience with respect to enemy action. In today's fiscal reality and tomorrow's projected operational environment, that is a combination Navy leaders should not ignore.

DEBATING THE WAR-AT-SEA FLOTILLA: ANALYSIS CRITICISM AND RESPONSE

When this article originally appeared on the blog *Information Dissemination* in April 2013, it generated intense debate on various discussion boards. The following is a representative sample of the most common composite criticisms of the war-at-sea-flotilla concept and associated analysis. Not included here are the comments that focused on the merits of the war-at-sea strategy itself. Although this analysis is intended to support the war-at-sea strategy, it is not meant to be its defense. Other, more effective strategic options may certainly exist. The merits of Hughes and Kline's work are taken at face value for the purposes of this analysis. This article analyzes the tactical implications in a very focused and basic scenario to show that a squadron of small combatants, which do not exist in today's fleet inventory, could be more effective than a large combatant in certain offensive missions against an enemy fleet.

The analysis is fine as far as it goes; however, like Hughes's work, it considers the engagement in isolation. Today's militaries, including the obvious target of China, fight in a combined-arms environment. For instance, the impact of airpower is ignored. Small combatants are extremely vulnerable to aircraft and would be susceptible to defeat in detail long before reaching engagement range.

The impacts of combined arms and supporting assets, from both the enemy and friendly perspectives, are actually embedded in this analysis. On the

offensive side, the type of attack need not be specified. Although antiship cruise missiles are the obvious choice, deception tactics used to get close to the enemy combined with a single torpedo may also be very effective. On the defensive side, both the large and small combatants would require area-defense support (in all warfare areas). Certainly the large combatant would be more capable of self-defense but, in the case of an Aegis-equipped destroyer/cruiser, it is exactly this added defensive capability (in addition to other warfare capabilities, such as ballistic-missile defense and antisubmarine warfare) that requires area-defense support. As a commander, would you risk losing an Aegis combatant by sending it on an offensive mission in hostile territory alone and unafraid? As for the enemy, any supporting capabilities that can be brought to bear on the striking force are accounted for in the intentionally generalized probability of mission success (P_s). The individual small combatant only succeeds half the time ($P_s = 0.5$), not just because of its own limitations, but also because of the enemy's capabilities.

A larger combatant, such as an Arleigh Burke–*class guided-missile destroyer, would have a better chance of survival to engagement.*

Granted, the large combatant may be more capable of preventing missile impact (although small combatants have an inherent stealth advantage and soft-kill techniques continue to level the playing field), but even if the small combatants were much more likely to take missile hits, the resilient capability of the overall squadron may very well be worth the premium paid in damage costs.

How do you convince the American public that people who join the Navy are to serve on ships that we know will die fast in a war? Do you tell them that it is cost-effective to lose six of eight ships, as long as they kill one of the enemy's?

Consider which is worse: a large combatant goes toe to toe with an enemy combatant, takes a devastating missile salvo that kills a significant portion of its crew, and gets put out of the fight for months with extreme damage repairs while the enemy continues on its way; or a squadron of eight small combatants loses six ships but manages to accomplish the mission with the remaining two by destroying the enemy combatant. These are not "ships designed to lose"; this is a squadron, and therefore a Navy, designed to win.

These small ships must rely on networks to be effective. What happens when the Chinese jam/spoof U.S. networks on the opening day of conflict?

It is precisely the opposite that makes the war-at-sea flotilla so effective. Since the flotilla ships are not connected in a network, their operations can be considered independent, which leads to the high overall P_s described in this analysis.

It is the independent nature of the small combatants from which the squadron derives its power. In fact, the lack of an elaborate network reduces the flotilla's electromagnetic signature, further increasing its combat effectiveness by making it harder to detect.

I just don't see eighty million dollars being the price per unit at the end of the day.
A common criticism was that eighty million dollars is a gross underestimate for a small combatant. Even if the estimate were off by 100 percent and the actual unit cost were $160 million, the entire squadron of eight ships would cost $1.28 billion—still less than an *Arleigh Burke* guided-missile destroyer. For argument's sake, assume the costs were equal. At that point, the squadron would yield higher effectiveness and more resilience for the same price (for the particular mission in question).

Surface combatants serve as a mobile base for maritime helicopters and increasingly capable vertical-takeoff unmanned aerial vehicles. A large helicopter deck and hangar are arguably the primary strengths of a modern surface combatant. Yet nowhere does one see that the author's proposed "eighty-million-dollar small combatant" would be capable of supporting a "helo" or even a Fire Scout.
While this is certainly a narrow view of surface warfare, it is often valid in today's operations. The war-at-sea flotilla, however, is predicated on the notion that at some point in the future the U.S. Navy will be called on to conduct offensive operations against modern enemy combatants at sea. The primary strength of the small combatants described here would be their ability to launch a devastating salvo of next-generation cruise missiles. If an organic air asset were deemed to be absolutely mission critical, unit cost would certainly increase, but it would not invalidate the concept (refer to the unit-cost criticism above).

If we are focused on launching cruise missiles better, we can do it better and cheaper from a dedicated Navy ship. Drones can provide comparable endurance, less cost and risk, and larger launch envelopes. An International Organization for Standardization–sized container of cruise missiles could be put on any allied ship with a Navy team and become another launch node. Letters of marque could be issued, and this same modular payload could be operated by Navy technicians on eager Philippine and Vietnamese ships. If we take the Chief of Naval Operations' direction to heart— payloads over platforms—we really just need a box of missiles and need to focus on the P_{mk} of the missile.
Drones and converted containerships are both intriguing ideas for potential launch platforms, although each has its drawbacks. Achieving persistent presence

with land-based drones comparable to that provided by a flotilla may be a challenge, whereas naval drones are simply extensions of ships, which brings the discussion back to large versus small combatants. Containerships could certainly be inexpensive alternatives to purpose-built combatants, but the rules of engagement and political challenges to the use of neutral shipping as a cover to engage the enemy may be too great to overcome. Nevertheless, both ideas speak to the heart of this analysis: it is not really about small ships but about redundant systems of inexpensive nodes operating independently to produce impressive combat effectiveness.

Smaller ships need a logistics force to support their operations or an advanced base from which to operate close to the Chinese coast.

All ships need logistics forces to support their operations. The logistical requirements of a flotilla of small ships are only more pronounced, because the ships carry fewer organic logistical capabilities on board than do large combatants. However, the added logistical capabilities of large combatants can be a liability in open hostilities, because more personnel and resources in the overall supply chain are lost when the ship takes damage. When a small combatant is hit by the enemy, the overall supply chain is barely affected.

Doesn't the U.S. Navy already have a small, eighty-million-dollar antiship platform in the guise of the F/A-18E/F Super Hornet?

The comparison to naval aviation might be compelling, except that a naval tactical aircraft has to launch from an aircraft carrier, which would be the relevant unit to compare against the squadron of small combatants. The tactical range of the F-18 does not allow for the argument that the carrier itself would not be involved in the engagement. Even if the carrier's probability of success were 99.999 percent, the expected damage cost in the long term (in both financial and strategic terms) would be prohibitive.

This type of analysis, essentially identical to Hughes's approach, is extremely simplistic, so much so that meaningful conclusions cannot be drawn. In fact, the results can be misleading if the limitations are not clearly recognized.

Simple analyses can produce valuable insights that can be developed into integrated courses of action. Of course, strategy is not the summation of tactics, but it is important to start simple, or else one is left with a Navy that goes nowhere—or worse, a Navy that does not understand where it is going.

NOTES

The essay on which the present essay is based was originally posted on the website *Information Dissemination,* at www .informationdissemination.net/2013/04/ strength-in-numbers-remarkable.html.

1. Jeffrey E. Kline and Wayne P. Hughes, Jr., "Between Peace and the Air-Sea Battle: A War at Sea Strategy," *Naval War College Review* 65, no. 4 (Autumn 2012), pp. 35–40.

2. Ibid., p. 38.

3. Henry Hendrix, "Buy Fords, Not Ferraris," U.S. Naval Institute *Proceedings* 135/4/1,274 (April 2009).

4. Kline and Hughes, "Between Peace and the Air-Sea Battle."

5. Wayne P. Hughes, Jr., *Fleet Tactics and Coastal Combat* (Annapolis, Md.: Naval Institute Press, 2010), p. 378.

6. Duncan Long and Stuart Johnson, *The Littoral Combat Ship: From Concept to Program* (Washington, D.C.: National Defense Univ., 2007), pp. 5–9.

COMMENTARY

REFLECTIONS ON LEADERSHIP

Christopher H. Johnson

Leadership—this word has such a rich meaning. Yet in this the twenty-first century, does anyone fully appreciate it? Are we a nation that still honors leadership's inherent value to our society? Do we still strive to embody its principles in everyday life, or are we a nation—with perhaps even a military—that truly does not understand the meaning of the word? Have we, as a result, begun to embrace management as the new ideal?

I have been observing both leaders and managers for over forty years, during my Navy career, my time in the private sector, in church, and in several nonprofit endeavors. This is a summary of what I have learned.

LEADERSHIP VERSUS MANAGEMENT

Management is the science of creating and controlling a successful organization. It drives an organization into a groove of tried-and-true methodologies that make it orderly, lean, efficient, stable, mechanically correct, fiscally disciplined, highly analytic, well behaved, and productive. Management seeks success through implementation of disciplined habits, repeatable processes, and analytic decisions. Management is the organized pursuit of everyday achievements and success.

Leadership, on the other hand, looks beyond the everyday. It is the art of igniting an organization to achieve something new, different, and sometimes radical. Leadership is about understanding how, when, and where to break out of the comfort (and the shackles) of the management

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groove and be bold, responsive, innovative, and even revolutionary. Leadership encourages individuals to attack problems rather than just manage them, to seek breakthroughs and pursue blockbuster ideas, to challenge limits and leap over obstacles, to embrace risk and change, and to grasp victory at critical moments against all odds.

A leader is one who practices good management but simultaneously feels a constant compulsion to pursue something extraordinary. A leader is one who has wisdom and sense of timing to know when the moment is right to break out of that management groove and strike down a new path, someone who has nurtured within the inherent vision, courage, selflessness, humility, and fortitude to pursue that path to an extraordinary and often game-changing conclusion.

Management and leadership may sound like kindred concepts, but they are in fact radically different approaches to solving problems and moving forward. Management creates competence and then rides that competence to success. Leadership pursues greatness. Leaders frequently emerge during life's most perilous moments when managers have already thrown up their hands in despair of finding a reliable and safe solution.

How do leaders enable greatness? By doing what managers are taught not to do. Leaders are ceaseless and daring in the pursuit of progress. They are willing to be inventive and unconventional, to trust their intuition and take risks, to embrace innovation, to follow dreams and visions, and to stand tall in the most difficult circumstances. Leaders persistently challenge organizational resistance, regimentation, and inertia. They put thought into action more passionately and effectively, with a much richer feel for teamwork, and with a deep sense of obligation to their subordinates.

In practice, of course, the world earnestly needs both managers and leaders. However, it is critical to understand that when, in extraordinary circumstances, change is absolutely necessary, and we need people who *can* be in charge, then we are looking for leaders.

In 1776, George Washington's Continental Army was driven out of New York and almost captured. The fledgling American Revolution was on the verge of collapse. This army, though hounded by British troops on its trek through New Jersey, eventually escaped to northeastern Pennsylvania, where it moved into winter camp, presumably to rearm, resupply, lick its wounds, and prepare for reengagement in the spring. We might call that a management-driven approach—steady, sure, and logical. However, Washington had a bolder plan. He led his army across the Delaware River in small boats on Christmas Day, surprising the British, winning an improbable victory, and capturing muskets, powder, artillery, and a thousand prisoners. He reestablished the Americans as a fighting force with

which to be reckoned, and he ignited his army to a great achievement that made an imprint on history. George Washington was a leader.

Being a leader does not always imply initiatives as dramatic or historic as Washington's crossing of the Delaware. Even small, everyday departures from the norm can be extraordinary, for they drive us toward progress, new thinking, and renewal. That is the effect we expect from leadership.

TODAY'S CHALLENGE

For over two hundred years leadership has been a unique hallmark of American culture and arguably a significant component of its success. From the Founding Fathers and pioneers forward, leaders have consistently thrust our nation into new endeavors and advances. From Washington to President Harry Truman, from the purchase of Alaska to landing a man on the moon, from inventing the lightbulb to developing the personal computer, leaders have consistently challenged and bypassed conventional thinking. In significant ways, America has always embraced the vitality and vision inherent in good leadership.

Yet leadership can also lead to failure. The willingness to take a risk can also be an invitation to fail. Failure, however, is often the route to greatness. Edison failed thousands of times before he found the right way to build a lightbulb.[1]

However, today something is afoot that is gnawing at the fabric of that leadership, and we need to defend against it. Many, for example, consider a master's degree in business-style management the new form of leadership, because it is so analytic and risk averse. These people often regard a leader simply as an exceptional manager with an extra dollop of energy and a magnetic personality. Others believe that success, or wealth, or a fashionable position is the key to leadership, thus encouraging such people as celebrities, sports heroes, lawyers, politicians, etc., into positions of leadership. While yet others are so anxious to avoid missteps in their careers that they never dare to follow a course of greatness. The result is a growing unwillingness and inability to move forward, take risks, or courageously solve vexing problems.

Regrettably, I find many senior military officers and business executives to be examples of this. They often have all the trappings of leaders but they have rarely taken risks, perpetually toe the party line, and rarely break out of their shells to make a real difference. These impostors serve to confuse and misdirect us and could possibly pose a real threat to our great nation and our military if we allow such management types to become our models of leadership. If we had allowed this to happen in 1776, there might never have been a United States. We seem to be awash in problems but bereft of bold solutions. We search for leaders but find few. Where are they? Possibly they too are lost in the misperception of what leadership is.

LEADERSHIP AT ITS ESSENCE

What I have learned from my observations is that leadership has nothing to do with how people express themselves or how much they know. The world is full of intellects and showmen who cannot lead because they are too busy analyzing, theorizing, preening for the camera, or wringing their hands about what to do next. No, neither intelligence, education, eloquence, nor past position is an indication of leadership.

Rather, character is the heart of leadership. For that reason, the only true way to describe leadership focuses not on how leaders are educated or the processes or checklists they must follow (for that's how managers would try to describe the process of leadership), but on the qualities of character that leaders embrace. While a manager can be taught in the classroom, a true leader is molded by not only education but real-life experience.

There may be many interpretations of the quality set that drives a true leader, but here are what I have observed to be the key elements.

Passion. Leadership is rooted in a persistent passion, which in this context implies an irresistible commitment of body and soul to a forward-leaning purpose, to change, and to progress. It is a constant, constructive discontent with the status quo. Every leader I have ever known has it. It is not an outward, emotionalized, frenzied passion worn on the sleeve but an inner fire that only occasionally bursts through a cool and composed exterior. Where there is a real leader, I will show you passion.

This passion often contains elements of nobility and rebellion. It is noble because it encompasses the ability and willingness to sense right from wrong, selfless from selfish, good from bad, and to make consistently good choices between them.

Leaders are also rebels. There is a spirit within a leader that remains undaunted by criticism. A leader is often compelled to speak bluntly and is willing to disregard both regulations and conventional thinking. Often progress comes more in breaking rules than abiding by them. Joe Rochefort was Admiral Chester Nimitz's lead cryptologist prior to the battle of Midway. He broke many rules and willingly angered many superiors in Washington, but his passion for breaking the Japanese naval code led to a startling American victory at Midway and permanently reversed Allied fortunes in the Pacific theater in World War II.[2] Thomas Edison said, "Restlessness is discontent, and discontent is the first necessity of progress. Show me a thoroughly satisfied man, and I will show you a failure."[3]

Curiosity. Leaders are perpetually curious. As salesmen are taught to look quickly around the offices of people on whom they call to understand and form a better bond with them, so a leader must constantly learn more about the organization

he or she leads. In this regard, a leader's best friend is a great question—a question that is asked over and over until a meaningful insight surfaces. Answers, or even the absence of an answer, gives a leader the basis for an intimate understanding of the organization.

Leaders eventually learn that they cannot gain real clarity simply by taking briefs and reports from subordinates. They must walk around, engage people, ask questions, and feel the inner workings of the organization. Even the best-intentioned subordinate rarely sees or senses things through the same lens as the person in charge. Leadership is often based on perception and intuition. Leaders look for and sense the things that briefs will not reveal, such as an unhappy employee, a system that does not quite work, a bullheaded supervisor, or a brilliant but underperforming team member.

Curiosity truly educates a leader's perspective, and it supports two essential visions—one, a sense of how to move forward, and two, a peripheral vision that alerts a leader to the surprises that lurk around the corner. Surprise is a leader's greatest enemy, and curiosity can be the greatest resource.

Albert Einstein said, "I have no special talent—I am only passionately curious."[4] Walt Disney explains, "There's really no secret about our approach. We keep moving forward—opening new doors and doing new things—because we are curious. And curiosity keeps leading us down new paths. We're always exploring."[5]

Vision. Vision is often spoken of as some mystical ability to see the future and respond accordingly. Presidents are often praised when they are perceived to have it and vilified when they are perceived to lack it. However, I find vision to be no magical mental capacity but a much simpler, everyday thing—the convergence of passion, curiosity, imagination, and perspective. Passion fuels the leader's compulsion for progress, curiosity digs out the places where progress is most important, imagination allows one to see new ways of proceeding. Therefore, vision is not an issue of genius or clairvoyance.

Consider the possibility that there are really no new ideas and no new visions that leaders personally must feel responsible for inventing. Something that poses as a new idea or new vision is often just a refocus or rearrangement of many old ideas, connected in different ways to produce a fresh solution to a problem. After all, the vision of a horse cart is merely a mental image of a container, an axle, two wheels, and a horse, all connected for the first time.

Vision is the result of a passionate, inquiring, open, and practical mind that permits itself to think without preconceived bounds or conventions. It requires setting aside quiet time every day to consider new combinations and permutations and to see new possibilities. It is something normal and natural that often just requires the willingness to reflect on what could be.

Willingness to Act. It is stunning to find people who apparently have the instincts of a leader but cannot or will not take action. For example, take General George B. McClellan, of American Civil War fame. He loved to train, he love to organize, he loved to plan. He simply was incapable of moving into combat. During the Peninsular Campaign (as the documentarian Ken Burns notes in his 1990 PBS series *The Civil War*), he earned the sobriquet "the Virginia Creeper" for his willingness to move forward only at the agonizingly slow pace of a well known Virginia ivy plant, while constantly finding reasons for avoiding any engagement with the Army of Northern Virginia.

In a once widely known pamphlet, *A Message to Garcia,* Elbert Hubbard recounted the story of a man named Rowan who was assigned to take an important message from President McKinley to General Calixto Garcia, the leader of Cuban insurgents, who was somewhere in the mountains of Cuba. The story recounts that Rowan took the message and delivered it. He did not ask where Garcia could be found, how he could be recognized, how to get to Cuba, how to survive there, how to get back, or what clothes to pack. He simply took the message from President McKinley and delivered it. With obvious admiration, Hubbard proclaimed, "There is a man whose form should be cast in deathless bronze and the statue placed in every college of the land. It is not book-learning young men need, nor instruction about this and that, but a stiffening of the vertebrae which will cause them to be loyal to a trust, to act promptly, concentrate their energies: do the thing—'Carry a message to Garcia.'"[6]

Similarly, leaders cannot simply plan; they must act—when, how, and where they said they would. They must be decisive, even when there is insufficient information and analysis to decide properly; honor commitments; take direct charge when required in emergencies; and never allow fear to paralyze them or retard quick, effective, aggressive action. An essential part of a leader's job is constantly to "take a message to Garcia"!

Sacred Bond with Subordinates. The relationship between leaders and their adherents goes far beyond that of managers and their employees. Leaders understand that they are under constant surveillance. These are the qualities that really command the trust and loyalty of subordinates:

- *A resolute spirit:* Subordinates constantly seek evidence of courage, resolve, unflagging optimism, and fortitude to assure them that their leader is truly committed to the vision at hand and will be at their side to the bitter end— win or lose.

- *Integrity:* Subordinates earnestly seek from a leader and an organization justice, caring, and respect. They seek a place where no one is above the law, where a subordinate's welfare is a priority, and offenses are investigated and

dealt with fairly and openly. Subordinates respect leaders who are willing to bear the responsibility for their every action.

- *Truth:* Nothing is so corrosive to loyalty as someone using secrets and untruthful representations to gain favor. Regardless of how good or bad the news is, the leader's standard must be a full and honest account.

- *Balance and perspective:* A leader can be daring, but never rash or dogmatic, never willing to sacrifice subordinates needlessly or for mere glory. Subordinates seek constant assurance that leadership will act intelligently and thoughtfully, and will constantly find a way to win.

- *Humanity:* Subordinates want to know that a leader's decisions are based as much on their health and welfare, and those of their families, as on the completion of the task at hand. The leader must show them unbounded loyalty and respect. This allows subordinates to face difficult and dangerous, even deadly, circumstances with pride and dignity.

In addition to these qualities, I believe that every leader owns a unique personal quality that is somehow exemplary, that identifies and bonds him or her to the team. It can be humor, kindness, strength, honesty, empathy, intelligence, or any other trait, but in every case this quality is deep, enduring, and reassuring. Leaders take care to identify those singular qualities in themselves, and then lean on them, hone them, and let them shine.

Discussions on leadership often speak of eloquence and communication as crucial qualities for leaders. Communication rises above words, speeches, gestures, and superficial pep talks. It empowers the team to persevere in the toughest conditions.

Loyalty is crucial, but it can be easily faked when leaders do not measure up. Leaders see subordinates as treasured teammates or comrades in arms, while managers usually see them as mere employees. Which attitude prompts the greater loyalty in return? Which attitude cements that bond between leader and subordinate?

Commitment to Teamwork. Leaders lead people. They must remember that it is their team that really gets the job done. This points to a leader's real occupation—enabling, facilitating, and inspiring teamwork. Here is a key secret of leadership: once the value and purpose of teamwork are understood, a leader can lead almost any organization on earth, because success depends not on technical knowledge or masterful decision making but on shepherding teams effectively and then letting them do the work.

Adjusting or correcting the elements of teamwork is also, by far, the most expedient and effective way to improve an organization's performance. New equipment, detailed

training, and new facilities all cost money and take time to implement . . . but shifting team member roles, building confidence, opening new avenues of communication or sources of information can all be accomplished swiftly, and can invigorate a team's chemistry and ignite performance *overnight*. The Cincinnati Reds of Major League Baseball proved this in 1975 when, by moving Pete Rose from left field to third base and inserting George Foster in left field, they created the infamous Big Red Machine that won 108 games in 1975 and is to this day the last National League team to win consecutive World Series.[7]

Often, igniting a team can be very simple. A leader supports teamwork formally in five ways—by

- Listening to, observing, shepherding, and adjusting the team continuously

- Constantly removing obstacles to its progress, both internally and externally

- Pushing all team members to grow individually through delegating responsibilities to subordinates, allowing them to make key decisions, and building confidence in their decision-making abilities

- Encouraging and permitting the team to self-correct and self-inspire

- Holding team members accountable for their actions, not as punishment, but as a vehicle to heighten awareness that the team functions properly only when all do their jobs properly and efficiently.

In a very real way, teamwork underlies everything a leader accomplishes, and the constant development of the team is often the leader's most important job.

Humility. I find real leaders are perpetually intuitive. Leaders make decisions as much on instinct as they do on analysis, and the door to intuition and instinct is humility. By enforcing an inner quiet and a willingness to hear new ideas, leaders permit themselves to escape for a few moments from the amplified howl of analytic thought, dogma, preconceived notions, hardened positions, and the noise of educated opinion. This permits them to listen to quieter voices from their own team or within themselves.

When leaders send the message to their team that they know everything and have every answer, the proximate result is that everyone concerned stops bringing them new ideas, insights, inspirations, or warnings. The quickest way to be alone is to let your team know that you do not require its input.

Humility is a check against one's own voice, the door through which new inspirations enter, and a constant reminder that leadership is not about power and self-promotion but selfless pursuit of progress. It signals the leader when it is time to lead, when it is time to follow, and when it is time to compromise.

Perhaps Washington crossed the Delaware because he was more willing to listen to inspiration and intuition than to an educated evaluation of the probability

of success, and that required humility. Einstein reputedly said that "the intuitive mind is a sacred gift and the rational mind is a faithful servant. We have created a society that honors the servant and forgotten the gift."[8]

Leadership is often difficult; it runs counter to the more comfortable, and often more lucrative, path of management. A leader's road is often strewn with obstacles. Leaders take risks, and sometimes those risks lead to failure. Leaders are sometimes viewed as misfits, troublemakers, and rebels. Often the reward for a job well done, for grasping victory from the jaws of defeat, is dismissal or a letter of reprimand. After the success at Midway, Rochefort was removed by his superiors in Washington and never served directly in a cryptanalysis billet again.[9]

Interestingly, the John Wayne style of being a leader—big talking and guns a-blazin'—hardly seems to be the model for the everyday practice of leadership. Rather than constantly being at the epicenter of the action, the leader is just as likely to be in the background, letting the team do the real work—staying calm, collected, and supportive, and letting the traits of his or her leadership character shine through and imparting confidence, wisdom, and (at the right moments) daring to subordinates.

In the same way, the daily practice of leadership is embodied not so much by the image of a knight leading men into battle from atop a white stallion, but by that of men and women working hard to make the team successful and victorious, by

- Constantly balancing leadership and management traits to fit the situation

- Being curious and passionate

- Shepherding, improving, testing, and preparing the team for success

- Living up to the occasional take-charge moment or crucial, real-time decision

- Confronting failure with courage and determination

- Consistently finding time to be quiet to listen to his or her inner voice for guidance.

Leaders walk this road of leadership because they are compelled to follow that inner fire that pushes them out of the groove to make a difference. Leaders take pride in being among those people who find the new way, pursue it, and never shy away from conflict, danger, and opportunity. Leadership leads us all to greatness.

Local and national problems abound; it is a daunting world. We are in desperate need of leaders to solve our problems, because managers will not. Thus there is an increasing urgency for us all to come to grips with the real nature

of leadership, to understand the place of management and of managers in the context of leadership, to recommit ourselves to the development and practice of leadership in ourselves and our subordinates, and to have the courage to promote and protect people who fail in the pursuit of greatness—for that failure often makes them stronger and makes them better leaders.

NOTES

1. See "Edison's Lightbulb," *Franklin Institute,* at www.fi.edu/.

2. Elliot Carlson, *Joe Rochefort's War* (Annapolis, Md.: Naval Institute Press, 2011), pp. 993–1029.

3. *QuotationsBook,* www.quotationsbook.com, s.v. "Thomas Alva Edison."

4. *Einstein,* s.v. "Carl Seeling" (11 March 1952), einstein.biz/.

5. Michael Eisner, foreword to *Walt Disney Imagineering,* by Walt Disney Company (New York: Hyperion, 1998), p. 9.

6. Originally published as Elbert Hubbard, "A Message to Garcia," *Philistine* (March 1899).

7. "Major League Baseball World Series History," mlb.mlb.com/.

8. Widely attributed to Albert Einstein, although sources differ.

9. Carlson, *Joe Rochefort's War.*

BOOK REVIEWS

IS PROFESSIONAL MILITARY EDUCATION NECESSARY?

Ricks, Thomas E. *The Generals: American Military Command from World War II to Today.* New York: Penguin, 2012. 576pp. $32.95

Tom Ricks has earned over the past two decades a justified reputation as a thorough and knowledgeable military correspondent. His latest work addresses the decline in the competence of generals in the U.S. Army, which he regards as a major and timely issue. As is to be expected from such a thoughtful journalist, Ricks has produced an important book that should spark debate and discussion not only among the Army's leaders but also among those of the other services. *The Generals* is well written and at times insightful. Indeed, it makes a plausible case that there is something flawed in the choice and education of Army leaders. For that reason alone it deserves close attention from those responsible for the shaping and course of service personnel policies that guide the preparation and promotion of America's future military leaders.

Nevertheless, there are serious weaknesses in Ricks's examination. Admittedly, he has provided an excellent catalogue of the symptoms that indicate the decline in quality of Army generals from George Marshall to Tommy Franks. However, in the end, Ricks's account fails to address systemic factors that lie behind that decline. Thus at few points does he draw out the underlying landscape of causality and accident, the impact of chance on events, the other possibilities open to Army leaders of the past, or the impact of trends and political choices on the Army's leadership. Moreover, he fails to address the elusive but essential problem of changes in the Army's culture over time, or how and why those changes came about. Yet from this military historian's point of view, that last issue represents the crucial element in the effectiveness of military institutions.

What this review aims to suggest is some of the larger areas that do not form a part of Ricks's account, such as the problem of unexpected changes in the underlying culture of the Army; the problem of unintended effects in personnel decisions and overall policy; the often baleful choices that political leaders have imposed on the Army; the importance of understanding the continuity of events in examining the leaders

who reach the senior levels; and above all, the intellectual framework within which that leadership has developed.

The difficulty with developing military leaders to which Ricks alludes is that the military profession demands two different attributes in its leaders, attributes that flow from the very nature of the profession. As Michael Howard so brilliantly suggested in an address at the Royal United Services Institute in the early 1970s, the military represents a profession that, fortunately, rarely gets to practice the fundamental reason for its existence—namely, the conduct of wars. That reality in turn makes the leadership of military forces not only the most physically demanding of all the professions but the most demanding intellectually. The mere running of military forces in peacetime, particularly after the Second World War, has become such a complex task that its leaders can all too easily lose sight of the reason why their organizations exist. Moreover, over the course of the twentieth and twenty-first centuries military institutions have confronted the considerable problems that rapid changes in technology bring in their wake. How then are military leaders to address a world in constant flux, with its massive social and technological changes? Most importantly, they cannot replicate the horrors and complexities of the battlefield on which their soldiers, marines, sailors, and airmen will fight. That conundrum represents the heart of peacetime innovation, on which the combat effectiveness of military institutions depends.

Let us begin with George C. Marshall, whom Ricks has quite rightly selected as the paradigm by which those who aspire to high command should model their careers (but more often do not).

The problem with selecting Marshall, however, is that he was an anomaly in the officer corps. Significantly, and reflective of the weaknesses in his analysis, Ricks omits to discuss Marshall's seminal role as the deputy commandant of the Army's Infantry School, at Fort Benning, in the 1930s. In that post the Army's future chief of staff emphasized the education of the faculty as well as of the students. If he kept a "black book" in which he recorded the most outstanding, as well as the least capable, of the officers with whom he came in contact, it was at Fort Benning. There he could, and undoubtedly did, observe a considerable number of officers who passed through that institution as either faculty members or students and who would eventually lead the U.S. Army in World War II.

In the midst of the rush to mobilize a grossly unprepared institution to meet the desperate situation of 1940, Marshall's emphasis on education remained steadfast. Significantly, with the world going to hell in a handbasket in June 1940, two out of the six faculty members of the Army War College at Fort McNair were Colonel W. H. Simpson and Major J. Lawton Collins. In today's military an assignment as instructor to a war college during a major crisis is a sure sign of the end of a career. Not so in Marshall's army. Simpson would become a lieutenant general by 1944 and command the Ninth Army in the European Theater of Operations, while Collins would be a division commander by 1942 on Guadalcanal, a corps commander in Europe by 1944, later an army chief of staff, and in the postwar period the Army's chief of staff. Yet both remained in their faculty positions for the remainder of the 1940–41 academic year. That is perhaps where the greatest difference

lies between the culture of today's military and the attitude of Marshall.

Ricks is quite right to underline the ruthlessness with which Marshall and his senior subordinates fired those who failed to measure up to the demands of war. He is, however, on shakier ground in suggesting that they were willing to give those who failed a second chance. In fact, such cases were quite rare. Moreover, it is at the more junior levels (major and below) where one might consider a few second chances. In that respect, it is worth noting that Major Jack Galvin was one of the junior officers who felt General William DePuy's wrath during the Vietnam War and was fired. Nevertheless, in the Army of the 1970s, his career recovered, and he eventually reached the post of Supreme Allied Commander, Europe. In terms of World War II, the generals, for the most part, who were removed from command disappeared into retirement or into commands stateside as colonels. Those who did not were the exceptions.

Marshall and his subordinates were able to purge those whom they believed incompetent because the United States faced a challenge to its existence. Confronting that reality as well, the media were hardly willing to complain about the firing of incompetent officers from senior command positions. Thus it may be a stretch to point to command policies in a time of national emergency as a pattern worth following in the present.

A great weakness in Ricks's account lies in his failure to address the importance of professional military education (PME) to create a culture that can innovate in peacetime and adapt to the unexpected conditions of combat. The historical record of the interwar period suggests that the schoolhouse provided the basis for the strategic and operational framework within which America's military forces conducted and won the great campaigns of a two-front war, one that saw the projection of U.S. power across the Pacific and Atlantic Oceans. One of the possible explanations for the prewar emphasis on PME lies in the fact that without any significant resources in those years, the U.S. military had no choice but to devote much of its energy to serious study. On the other hand, it is also clear that many officers in that military believed that as members of a serious profession, they needed to study their profession just as lawyers and doctors do. On the Navy side of the house, it is significant that one of the most innovative CINCUSs (Commanders in Chief, United States), Admiral Joseph Reeves, spent a tour on the faculty at the Naval War College, in Newport, Rhode Island, while the future admiral Raymond Spruance, the great leader of the Central Pacific drive, spent two tours on its faculty.

At the end of World War II, many of the returning generals and admirals who had led U.S. forces identified the staff and war colleges as having played major roles in preparing them for the arduous tasks they had just confronted. Eisenhower, as the Army's chief of staff, went so far as to take a major part in the founding of the National War College. However, almost immediately the staff and war colleges declined in importance, until by the sixties they represented refuges in which both faculty and students could search for postretirement jobs or play golf. Thus the instruments for the study of the military profession never really recovered the influence they had possessed before the war.

There are a number of possible explanations. This reviewer favors two. First,

the pressures of the Cold War and the conduct of major wars in Korea and Vietnam led senior leaders to devalue education in favor of readiness. Second, but equally important, was the fact that the generation of leaders that assumed control of the American military in the early sixties had risen rapidly to command positions in the massive mobilization of World War II. Like Westmoreland—who refused a potential assignment to the Army War College with the comment that he was too advanced to be a student but was willing to serve as a faculty member—many officers dismissed the idea of serious study of their profession, having "learned" everything they needed to know about war and strategy from combat experience.

By skipping across a broad spectrum of the Army's history, however, Ricks ignores two other factors in the decline in the Army's generalship: the constraints that the post–World War II reforms in personnel policies created and still impose on the American military and the impact of the choices that political and military leaders inevitably make in the running of a complex organization. What was clear to those who had served in the interwar military was that the system of promotion then had not only been unfair but rewarded the slow, the plodding, and the stupid. Moreover, as Marshall's firing of so many officers at the war's outset underlined, the system had kept large numbers of officers on active duty who were too old or incompetent to serve in the harsh conditions of wartime.

The result was a major reform of the personnel system in the late 1940s and early 1950s. The "up or out" system, modeled on the industrial practices of the time, largely frames the present

practice. That system also aimed at keeping more officers at the middle levels than needed, to address the problems that a massive mobilization in a major world war with the Soviet Union would require. The up-or-out part of the equation aimed at ensuring that the system would prevent the stagnation that had marked the interwar Army and forced Marshall to fire so many superannuated officers. Moreover, the new personnel system, with its financial inducements encouraging majors, lieutenant colonels, and colonels to retire in their middle and early forties, fit the health profiles of the time. This, after all, was a period when officers smoked like chimneys and drank like fish. It certainly fit the model that American businesses had established for their executives, a model that came close to destroying the competitiveness of American industry in the 1970s. Most American industries have changed their personnel systems, forcing out those who fail to comply. The American military has not.

The unintended consequences of this system now plague the U.S. military. Above all, the twenty-year up-or-out system has created minimal flexibility for the broader education of the officer corps. Moreover, it encourages significant numbers of outstanding officers to retire at precisely the point when they could offer much to their services. The retirement policies have resulted in a brain drain that encourages many of the brightest and most competent to leave as early as they can to begin their second careers. Simply put, no competent business would allow the loss of talent that now takes place every year, as exceptional officers retire in their midforties. The bottom line has been a culture of few risk takers and

too many conformists. Therefore, the future Petraeuses of the Army, who have pursued efforts to broaden their knowledge of military and strategic history, have found themselves regarded by many of their colleagues as outliers. They are to all intents and purposes the exceptions to the rule, while too many others like Tommy Franks and Ricardo Sanchez have followed the system of lockstep promotion and assignment.

The Army's present culture (much like that of the German army, which lost two world wars because the brilliance of its tactics could not overcome its contempt for strategy and politics) should have been the centerpiece on which Ricks hung his argument. In particular, the failure of Fort Leavenworth and Carlisle Barracks to provide the educational underpinnings of Army culture represents the heart of where it has gone wrong. Of all the military institutions, the Army most requires the steady hand of professional military education.

Unfortunately, since 1945 the Army has been the service least served by that crucial enabler of military culture. Even after the Vietnam War underlined the flaws in the PME system, education received too little attention from those in charge. At times their interference was pernicious, as Ricks quite correctly points out in his discussion of the conflict between Jack Cushman and William DePuy. The mantra of the Army War College (at least when this reviewer was familiar with it) was that the institution existed to give officers rests in their busy careers. A former dean of the college was even quoted as "preferring that his officers spend their time on the golf course rather than in the library." Most of the attending officers got the message, although a few, like the future Marine general Paul Van Riper, simply went off to the Military History Institute and read books. Today, one of the great ironies in the Army's PME system is the fact that there is intense competition among the most outstanding Army officers to attend the junior or senior course at Newport and avoid Fort Leavenworth and Carlisle Barracks. Adding to the irony is that the Navy itself has over the past forty years made every effort to avoid sending its best officers to Newport, or to any other PME institution, despite the fact that the Naval War College has provided far and away the most intellectually challenging education in strategy.

In examining what has happened to the Army, it is not sufficient to hop, as Ricks does, from one decade to another to examine this or that general, who may or may not reflect the dominant cultural mores of a huge organization. Following Vietnam, the pressing problem was to reconstitute and reinvigorate a military organization that was on its last legs. It is not surprising, then, that the Army's leadership would concentrate on getting the tactics right; operations and strategy could come later. Here the two most important figures in rehabilitating the Army's leadership were Creighton Abrams and his successor, Frederick C. Weyand, who played crucial roles in pushing forward that extraordinary group of generals who emerged to put the Army right in the late 1970s and early 1980s. DePuy was only one of these generals, and while Ricks is right to credit him with considerable influence (good and bad) over the reborn Army of the 1980s, he virtually ignores other equally important figures. To understand the intellectual and cultural revolution of the 1970s at the Army's higher levels, we must look at the contributions of

generals like Don Starry, Paul Gorman, Glen Otis, and William Richardson.

Astonishingly, Ricks mentions General "Shy" Meyer, the brilliant Army chief of staff during the late seventies and early eighties, only in passing, quoting his famous comment about the "hollow army." Yet Meyer, with the help of the likes of Starry, Richardson, and Otis, was clearly aiming at creating a fundamental shift in the Army's culture. Asking why he failed and why General Al Gray of the Marine Corps succeeded would make for a fascinating examination of the difficulties and pitfalls involved in changing organizational culture. It also would have allowed Ricks to get at the heart of the problem.

Instead, Ricks jumps from his discussion of DePuy to a discussion of the generalship of Norman Schwarzkopf and Colin Powell, omitting the important story of the intellectual retrenchment of the intervening years, when DePuy, Meyer, Starry, and Richardson disappeared, to be replaced by lesser figures. In that tale lies the real cause of whatever decline has taken place. As one senior officer commented to this reviewer, changing the culture of military organizations "is like attempting to turn an aircraft carrier or ocean liner." But if professional military education is not going to determine a common culture of excellence, then individual choices are going to be the major determinants. Therefore, in understanding the Army's story, one also must pay attention to the role that accident, chance, or miscalculation by its political masters has played in the evolution of what appears to be a decline in the effectiveness of its leadership.

Schwarzkopf was probably least typical of the Army generals of his generation. Rumors ran in Washington that he had been shipped out to Central Command, at the time a relatively unimportant theater in the military pecking order, largely to move him out of the Army Staff, where his explosive personality had earned him a reputation for causing turmoil. In other words, it was chance and an underestimation of how rapidly the world was changing that led him to fame and fortune.

It was during the 1990s that flawed political choices had the greatest impact on the culture of the Army's leadership. It is not that Tommy Franks appeared mysteriously or as the result of a straight-line collapse in the culture of the general-officer corps. In discussing the causes of the Vietnam disaster, Ricks rightly highlights the dysfunctional relationship between Lyndon Johnson and his military advisers—a flawed relationship exacerbated by the dishonesty of Secretary of Defense Robert McNamara and the Chairman of the Joint Chiefs of Staff, General Maxwell Taylor. In President William Clinton's administration, civil-military relations were equally dysfunctional, and for similar reasons. Here the president, for reasons that remain opaque, appears to have aimed at appointing senior service commanders who were extraordinarily weak.

The Army got the worst of the deal. General Dennis Reimer may have been the weakest of Clinton's appointments. Undoubtedly a well-meaning officer, Reimer nonetheless made decisions that now have, and will continue to have, a baleful impact on the Army's culture. Simply put, he wrecked Fort Leavenworth by decreeing that all majors would attend the Command and Staff College, and that there would be no board selection for officers to attend the college. The result was a drastic downgrading

of quality of faculty, students, and instruction. Reimer then proceeded to appoint a family friend, General John Abrams, a skilled soldier with a dominating personality that brooked no argument, to the Army's intellectual heart, the Training and Doctrine Command (TRADOC). The other choice was Lieutenant General Don Holder, an intellectual soldier who would have been an ideal individual to hold that position, but Reimer had been an aide to Creighton Abrams and thus appointed his son to the critical TRADOC position. There the younger Abrams created an atmosphere of fear and distrust among his subordinates—hardly what the Army needed when preparing to address the challenges of the twenty-first century.

In his epilogue, Ricks provides some suggestions for fixing the Army's problems. Unfortunately, they have not been thought through and for the most part are not realistic or of much use in addressing systemic issues. At best they are pablum. After all, even if Army leaders were interested in change (and many are), what could they possibly do? Of what use are such statements as "In assessing the strategic situation today, Marshall might conclude that having adaptive, flexible military leaders who also are energetic, determined, cooperative, and trustworthy is probably more important now than at any time since he was chief of staff"? The devil is in the details, and Ricks has provided no solution as to how the Army might create general officers with those characteristics.

As for giving generals second and third chances, that suggestion would lead to even greater mediocrity. It would be anything other than the hard-charging and competent who would get the second

chances. As this reviewer's colleague and friend Colonel Richard Sinnreich has pointed out, "Could flag officer quality be improved by institutional changes? No doubt it could. But those changes would require more than just better PME. They would require a willingness to identify, select, and groom potential senior leaders in ways to which American society in general, and politicians in particular, have proved utterly hostile. Could we fire generals more readily? Sure, but that's a damn hard way to improve quality. Moreover, the Navy already is under growing fire for excessive command reliefs. The real challenge isn't to fire more [generals], as Ricks would have it, but rather promote fewer with much more discrimination. Thorough examinations, 360-degree efficiency ratings, graded exercise performance— there are a host of tools available to winnow future leaders. Firing generals is as much a confession of system failures as of individual failure, and even when necessary imposes huge costs."

In fact, real change would require systemic alteration in the Army's culture, which would then require breaking many rice bowls and discarding many pet rocks. It would aim at change over decades rather than over the short term. It would require massive changes in the educational approaches at Fort Leavenworth and Carlisle Barracks. In this regard, the current Army leadership is taking a step in the right direction by board-selecting officers to attend Fort Leavenworth. It would mean making intellectual performance at PME institutions play a major role in promotions and assignments. This means that those institutions would have to force their students to study the profession of arms and the crucial issues they will have to

deal with—war, strategy, and military operations. It would also make performance at staff and war colleges play a major role in selection for command positions. Above all, it would mean drastic changes in the Army's personnel system, and to the personnel systems of the other services as well. Had Ricks been willing to wrestle with these issues, he would have written a very different book.

Perhaps the most depressing aspect of the landscape of the current American military has been the return to a moral calculus that is nothing short of a return to the sexual standards of the Victorian age. Over the past several months we have seen the president of the United States remove a highly respected retired general, to whom the country owes much for his having turned around the situation in Iraq, from the directorship of the CIA for having an affair. At the same time the generals who botched up the war in Iraq were, as Ricks notes in a number of cases, not fired. Moreover, in one case, in a sad repetition of Westmoreland's promotion to become the Army's chief of staff after his disastrous tenure in Vietnam, a general whose performance was hardly more impressive was removed from command in Iraq and promoted to the position of the Army's chief of staff.

At present, it would seem that media and politicians would prefer standards for military leaders that emphasize "moral" behavior rather than competence in the profession—standards that few have followed. In a world where competence in any profession is an extraordinarily rare commodity, and especially competence in the military, this is indeed a dangerous precedent. The message emanating from Washington would appear to be that our leaders

prefer military leaders who are simon-pure (at least in their sexual mores) to competent generals and admirals. In the end, those at the sharp end will pay a terrible price for such imbecility.

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Gaddis, John Lewis. *George F. Kennan: An American Life*. New York: Penguin, 2011. 784pp. $39.95

Winner of the Pulitzer Prize for Biography in 2012, as well as a number of other awards, John Lewis Gaddis's study of George F. Kennan (1904–2005) has already firmly established itself as the fundamental scholarly biography for the Cold War period in American history. Gaddis began work on this biography in 1981, not long after he had spent a two-year period as visiting professor of strategy and policy at the Naval War College. At Newport in those days, he was already admired for his first book, *The United States and the Origins of the Cold War, 1941–1947* (Columbia Univ. Press, 1972), and for the exemplary quality of his teaching, which won him a Department of the Navy Meritorious Civilian Service Award at the Naval War College.

It was his first book and subsequent articles that brought Gaddis to Kennan's attention and led him to choose Gaddis as his authorized biographer. In giving Gaddis unrestricted access to what would eventually become 330 boxes of Kennan's diaries and papers at Princeton University's Seeley G. Mudd Manuscript Library, as well as giving him regular interviews, Kennan stipulated that the biography would not be published during his lifetime and so ensured that it would be a long-maturing project.

As the author relates in his foreword, Kennan was apologetic that he lived for another twenty-five years, thereby delaying Gaddis's work for as many years. While this did run the risk that the subject might outlive the author and all would have been in vain, the end result proves the merit of the plan. It is often said that the best biographies are those written by mature scholars who have developed not only a wider and deeper perspective on the contexts of their subjects' lives, but also have their own life experiences to help them understand more sensitively those of others. So it is with John Gaddis's life of George Kennan. Yet Gaddis's book was not a finished and preapproved manuscript that merely waited the death of the subject to see the light of day. It would take Gaddis six and a half years after Kennan's death to complete the work. In doing so, Gaddis leaned neither on Kennan's own published memoirs nor on the fourteen earlier studies of Kennan by other scholars. Instead, he used his own deep knowledge of the man and the Cold War era and his broad understanding of grand strategy to provide a brilliant and independent scholarly assessment that is entirely Gaddis's own.

George Kennan is most widely remembered for the article that appeared in *Foreign Affairs* journal in July 1947 titled "The Sources of Soviet Conduct." The pen name used for the article, "X," only very briefly obscured his identity as its author. This article elaborated on Kennan's "long telegram" that he, as acting head of the U.S. diplomatic mission in Moscow, had written to the Treasury Department in February 1946. Kennan's telegram responded to the Treasury Department's bewilderment that the Soviet Union had failed to join the World

Bank and the International Monetary Fund after having participated actively in the Bretton Woods conference that created them both. Taken together, these two writings provided the intellectual foundation for the subsequent American grand strategic response to the Soviet challenge during the Cold War.

With these two pieces of writing, Kennan's analytical and writing skills reached their epitome of effectiveness and fame. Behind them, as John Gaddis reveals, Kennan was a strange and rather unpleasant man. To the reader, Kennan seems to have been some kind of misanthropic malcontent. A man of some considerable intellectual capacity, he was a notably egocentric, broody, dissatisfied, gloomy, and dismal soul. Gaddis shows that his misanthropic tendencies arose from a largely imagined unhappy childhood caused by his mother's early death. Born in Milwaukee, Wisconsin, he was sent as a teenager to St. John's Military Academy, where the staff discouraged the loner from pursuing a further military career. His intellectual capacity won him entrance at Princeton University, where he thought himself a Midwesterner out of place among the eastern elite. On graduating from Princeton in 1925, he decided to enter the Foreign Service, not knowing what else to do. As a junior Foreign Service officer, he found it interesting to be abroad in foreign cultures, but the Service, itself, dissatisfying.

Despite his attitudes toward the Foreign Service, he did show significant organizational skill in nearly single-handedly setting up the American embassy in Moscow in 1934, in running the German embassy between 1939 and 1941, and in providing leadership among the Americans that the Nazis had interned at Bad Nauheim from December 1941

to May 1942. After the war, he was the key figure who established the State Department's Policy Planning Staff, and ran it during its most effective and influential period. On his return to the United States from his periods abroad, he found himself out of sympathy and rather puzzled by American culture and politics. Yet, unlike many who live abroad for long periods, he did not become fully comfortable in another culture, although obviously enthralled by Central and Eastern Europe, particularly the Soviet Union and Russian culture. With his extensive credentials for the job, President Truman appointed him ambassador to the Soviet Union in 1952, yet he was the least successful of all, staying but five months before Stalin declared him persona non grata, the only American ambassador in Moscow ever to achieve that distinction. At the end of his Foreign Service career, he went on to become a professor at the National War College, and, from time to time, lectured in Newport at the Naval War College.

On leaving the Foreign Service, Kennan went to the Institute for Advanced Research at Princeton University, where he continued his quixotic career, writing history, but not fully accepted by the historical profession, winning numerous prizes for his writings, but still wondering why his thoughts were not acted on instantly by policy makers. Kennan was twice invited as a visiting professor at Oxford, but typically found the experience trivial, choosing to isolate himself as much as he could.

The extensive contradictions in Kennan's character make for a remarkable study of an individual, but they explain, too, why Kennan never became an effective senior leader in government, although remaining influential as a public intellectual.

John Gaddis's fine book can be read on several levels for several purposes. Readers of this journal may find it a fascinating case study of the successes and frustrations of an intellectual who is trying to educate serving officials as they put a grand strategy in place. At the same time, it is a case study that illustrates the problems and frustrations for a government in trying to employ such talented and sensitive individuals.

JOHN B. HATTENDORF
Naval War College

Harrold, J. E., ed. *Turning the Tide: The Battles of Coral Sea and Midway.* Plymouth, Devon, U.K.: Univ. of Plymouth Press, 2013. 232pp. £35

The latest volume of the Britannia Naval Histories of World War II revisits the Royal Navy's official histories of two pivotal naval battles. Taken from the previously classified battle summaries, numbers 45 and 46, this newly printed edition is a valuable aid to the study of two groundbreaking carrier battles in the Pacific War.

Originally drafted and written between 1946 and 1951, these insightful summaries were meant to provide lessons learned for the Royal Navy officer corps studying maritime warfare in the first decade of the postwar era. As noted in Philip Grove's introduction, these official histories "cross-refer and blend the official publications more than published works of the same era." *Turning the Tide* enables twenty-first-century readers to revisit the myths of the battles and reconsider the decisions that the leaders of the U.S. Navy and the Imperial Japanese Navy faced during those months of uncertainty in 1942. While we

may not necessarily find new information in these portrayals of the battles, we will find much to ponder in how the postwar generation studied these two pivotal fights in the Pacific theater from these richly constructed summaries.

As befits a British publication, the front-matter data, the Allied orders of battle (the battle summaries specifically), include United Kingdom contributions to the Allies' efforts in the Pacific War. In his foreword, John Rodgaard punctuates the special Anglo-American relationship, writing that these histories are "a testament to the high degree of cooperation and interaction that existed between the Royal and United States Navies" and that "continues to the present." By combining the two summaries, the publishers logically follow the sequence of events that occurred in May and June 1942, as well as highlight the importance of securing the Allied sea lines of communication between the United States and Australia prior to decisive engagement with the Japanese navy. The spirit of Anglo-American relations permeates this British version of American naval history.

Each of the summaries is organized chronologically by major surface movements, Japanese air engagements, and air battles, followed by lessons learned. Included are tables that list Japanese and Allied platforms, operational maps, and hand-drawn diagrams depicting force dispositions. Although the summaries do not contain battle photographs, they do provide diagrams of tactical formations and cloud coverage to assist readers in understanding how weather affected visibility and detection. Another interesting feature is the inclusion of Japanese sources. Discerning readers will find the footnotes

fascinating waypoints as to how the postwar historians generated the official account of these battles. For example, the summaries omit any specific mention of Joe Rochefort's decryption of Japanese messages prior to Midway but comment that "the Americans correctly appreciated that Midway Island and the Aleutians would be the threatened areas." This book is as much a description of history as it is a historical document, and it should be valued as such.

The battles of the Coral Sea and Midway were contests that brought many firsts in naval history. As Rodgaard observes, the Coral Sea was the first naval battle in which belligerent surface forces never saw the other side. At the Coral Sea attacks were exclusively conducted from the air, confirming "the primacy of the aircraft carrier as an offensive weapon" in the maritime domain. This book recognizes Midway as the beginning of the end for imperial Japan and provides detailed listings of Japanese losses. To be sure, Jon Parshall and Anthony Tully's *Shattered Sword: The Untold Story of the Battle of Midway* (2007) remains the definitive account of Midway; however, *Turning the Tide* is a more succinct and, at times, accessible account of the battle.

In publishing these summaries in a single volume, the Britannia Royal Naval College has provided an excellent overview, one that can be useful for novice and seasoned naval historians in understanding two key Pacific battles. Furthermore, this book illuminates the rise of carrier aviation during the Second World War and, perhaps, the perpetuation of carrier aviation by navies thereafter.

JON SCOTT LOGEL
Naval War College

Werneth, Ron. *Beyond Pearl Harbor: The Untold Stories of Japan's Naval Airmen.* Atglen, Pa.: Schiffer Books, 2008. 256pp. $59.95

Ron Werneth has gone above and beyond the call of duty to produce a detailed perspective of the Japanese airmen of World War II. Werneth spent nearly a decade living in Japan and immersing himself in its culture. He traveled extensively to obtain firsthand accounts of seventeen Japanese naval veterans.

The book is divided into three sections, providing discussions of veterans of Japanese carrier bombers *(kanbaku),* Japanese carrier attack planes *(kanko),* and Japanese fighter aircraft *(kansen).* However, not all accounts are from aviators; some are from maintenance personnel and navigators. The veterans' accounts provide details of these men's lives, an approach that humanizes them, especially for Americans who may still bear ill will toward the Japanese.

One Japanese veteran, Ensign Takeshi Maeda, was instrumental in attacking and sinking USS *West Virginia.* Takeshi Maeda tells the remarkable story of how in 1991 he was invited to the fiftieth anniversary of Pearl Harbor. At the event, which his family had not wanted him to attend, he met a *West Virginia* survivor, Mr. Richard Fiske. Maeda told Fiske that he was sorry for attacking Pearl Harbor, and Fiske responded by graciously telling Maeda that he had just been following orders and it was not his fault. Not only did this help Maeda personally, but it also provides us a larger perspective of the war, especially Pearl Harbor.

It is fascinating to learn that a number of its participants had been totally unaware of the planned attack on Pearl Harbor until the days immediately preceding 7 December. One veteran, Ensign Yuji Akamatsu, states that he never doubted that attacking Pearl Harbor was the right thing to do, in view of the economic hardships Japan was facing. However, many other veterans' accounts explain how the attack was either a bad idea or how they were just doing their jobs for their nation, and offering their own patriotic perspectives.

Werneth has a fascinating writing style and makes the stories come alive with his carefully chosen words, explanations of details and Japanese terms, and use of illustrations. He did an outstanding job acquiring photographs of the Japanese naval airmen, both old and new, including photos of ships, planes, and actual attacks.

This book is an absolute must-read for any naval aviator or student of the World War II Pacific theater.

MAJ. JASON RAVNSBORG, U.S. ARMY RESERVE

Coll, Steve. *Private Empire: ExxonMobil and American Power.* New York: Penguin, 2012. 685pp. $36

What is it like to lead and work for America's largest privately owned company, one that finds, transports, processes, and ultimately delivers a product essential to the operation of almost everything in the developed world? This product is found hundreds to thousands of feet below the surface of the earth, from the deserts of the Middle East to the Arctic, as well as many miles beneath the ocean. It is located in areas of the world that are isolated, disease ridden, politically unstable, and often right in the middle of armed conflicts.

When this company gets the product to where it is needed, when it is needed, and at the expected price, it is highly regarded. However, when it does not meet required standards or generates profits perceived to be higher than "reasonable," it is the object of scorn.

The company is ExxonMobil, and the product is petroleum, primarily oil, and natural gas. Steve Coll, twice winner of the Pulitzer Prize, does a great job of taking readers behind the scenes, from the *Exxon Valdez* disaster in 1989 to the BP *Deepwater Horizon* disaster in 2011. In this extremely well-researched book, Coll uses his considerable interviewing skills and his well-developed network of sources to illuminate the interests and perspectives of key members of the company itself and officials from the administrations of George H. W. Bush, Bill Clinton, George W. Bush, and Barack Obama, as well as those of other nations and other energy companies.

He begins with the *Exxon Valdez* accident and details the effect it had on risk assessment and safety-control measures taken by the company worldwide, and on efforts to perfect media and public-relations capabilities. Lee Raymond, then president of the company, admits that the accident suggested the need for "perhaps a rebalancing of risk-reward in many of our operations," which he takes to heart as he drives home many changes in the risk-assessment calculus that the company uses.

Coll describes all the places ExxonMobil must go to secure oil: Aceh, Indonesia; Chad; Equatorial Guinea; Iraq after the 2003 American invasion; Russia; Canada; and Nigeria. All these locations bring different types and combinations of risk, from security to political, corruption, environmental, and economic. This is a fascinating story of overlapping and conflicting interests, with the U.S. Department of State, and even members of the administration, in the background, waiting to help if needed.

One of the most interesting parts of this book deals with ExxonMobil's organizational culture, influenced directly by the values of CEO Lee Raymond and his successor, Rex Tillerson, a culture that goes back to the company's founder, John D. Rockefeller, who established it, as Standard Oil, in 1870.

This company culture is inculcated within the organization and communicated outside the firm through lobbying and deliberate efforts to communicate perspectives to policy makers and thought leaders, not only in the United States, but worldwide.

All consumers of petroleum products should read this book, to improve their understanding of the complexities and dilemmas presented by the search for and transportation, processing, and final delivery of oil and gas.

ROGER DUCEY
Naval War College

OF SPECIAL INTEREST

RECENT BOOKS
A selection of books of interest recently received at our editorial office, as described by their publishers:

Wray, Robert O., Jr. *Saltwater Leadership: A Primer on Leadership for the Junior Sea-Service Officer.* Annapolis, Md.: Naval Institute Press, 2013. 204pp. $22.95
Designed for busy junior officers in the U.S. Navy, Coast Guard, and merchant marine, this primer teaches the basics of leadership in five focused, sequential steps, beginning with an overview of major leadership studies, followed by an informative summary of the wisdom of 380 senior seagoing officers. Along with this sage advice, the final chapter helps readers build personalized plans to improve their own leadership skills.

Winslow, Richard E., III. *"A Race of Shipbuilders": The Hanscoms of Eliot, Maine.* Portsmouth, N.H.: Portsmouth Marine Society, 2013. 305pp. $35
In the 1600s, members of the Hanscom family settled in the Kittery/Eliot area of Maine as British colonial subjects in the New World. Over a period of three hundred years, a number of their descendants became nationally known shipbuilders and naval constructors. This book describes their successes, accomplishments, trials, and tribulations in forging their imprint on the maritime, marine, and naval worlds.

REFLECTIONS ON READING

Professor John E. Jackson is the Naval War College's program manager for the Chief of Naval Operations Professional Reading Program.

T he motto of the Chief of Naval Operations Professional Reading Program (CNO-PRP) is "Read to be ready." To encourage sailors at all levels to read books of consequence, lending libraries have been established on board every ship and squadron and on every major shore facility. The CNO-PRP is a *professional* reading program, not a simple list of books intended to be read for relaxation and entertainment. Accordingly, these books should be read with techniques different from those used by the casual reader. Mortimer Adler and Charles Van Doren's highly regarded *How to Read a Book: The Classic Guide to Intelligent Reading* provides some suggestions on how readers can get the most out of their time (quotations from the Touchstone Books / Simon & Schuster edition of 1972):

> Television, radio, and all the sources of amusement and information that surround us in our daily lives are also artificial props. They can give us the impression that our minds are active, because we are required to react to stimuli from outside. But the power of those external stimuli to keep us going is limited. They are like drugs. We grow used to them, and we continuously need more and more of them. Eventually, they have little or no effect. Then, if we lack resources within ourselves, we cease to grow intellectually, morally, and spiritually. And when we cease to grow, we begin to die. Reading well, which means reading actively, is thus not only a good in itself, nor is it merely a means to advancement in our work or career. It also serves to keep our minds alive and growing. (Page 346)

> They go on to say:

> A good book does reward you for trying to read it. The best books reward you most of all. The reward, of course, is of two kinds. First, there is the improvement in your reading skill that occurs when you successfully tackle a good, difficult work. Second —and this in the long run is much more important—a good book can teach you about the world and about yourself. You learn more than how to read better; you also

learn more about life. You become wiser. Not just more knowledgeable—books that provide nothing but information can produce that result. But wiser, in the sense that you are more deeply aware of the great and enduring truths of human life. (Page 340)

The authors advocate what they call "analytical reading":

The analytical reader must ask many, and organized, questions of what he is reading. We do want to emphasize here that analytical reading is always intensely active. On this level of reading, the reader grasps a book—the metaphor is apt—and works at it until the book becomes his own. Francis Bacon once remarked that "some books are to be tasted, others to be swallowed, and some few to be chewed and digested." Reading a book analytically is chewing and digesting it. (Page 19)

Adler and Van Doren recommend that readers ask themselves four primary questions as they read:

1. What is the book about as a whole? You must try to discover the leading theme of the book, and how the author develops this theme in an orderly way by subdividing it into its essential subordinate themes or topics.

2. What is being said in detail, and how? You must try to discover the main ideas, assertions, and arguments that constitute the author's particular message.

3. Is the book true, in whole or part? When you understand a book, however, you are obligated, if you are reading seriously, to make up your own mind. Knowing the author's mind is not enough.

4. What of it? If the book has given you information, you must ask about its significance. Why does the author think it is important to know these things? Is it important to you to know them? And if the book has not only informed you, but also enlightened you, it is necessary to seek further enlightenment by asking what else follows, what is further implied or suggested. (Pages 46–47)

The authors go to the heart of what I believe it means to "read to be ready" when they argue, "We must be more than a nation of functional literates. We must become a nation of truly competent readers, recognizing all that the word competent implies. Nothing less will satisfy the needs of the world that is coming" (page 31).

JOHN E. JACKSON